

231	522	67.2	237	22	AAE04523	Human single chain	304	228	29.3	129	20	AAW99505	Glycoprotein hormo
232	519	66.8	137	11	AAE04523	HCG analogue-bc' b	305	228	29.3	129	20	AAW99502	Glycoprotein hormo
233	517	66.5	234	16	AAE04523	Single chain gonad	306	228	29.3	129	20	AAW99496	Glycoprotein hormo
234	515	66.3	145	12	AAE04523	HCG/hFSH beta	307	228	29.3	129	20	AAE04518	Beta subunit of a
235	514	66.2	134	14	AAE04523	Modified hCG beta	308	227	29.2	111	21	AAE04515	Chorionic gonadotropin
236	514	66.2	237	16	AAE04512	Human single chain	309	227	29.2	129	20	AAW99500	Human follicle sti
237	513	66.0	237	16	AAE04512	Human single chain	310	227	29.2	129	20	AAW99500	Human follicle sti
238	509	65.5	98	19	AAW47494	Human beta-hCG pro	311	226	29.1	109	21	AAW92002	hTSH-beta analog
239	509	65.5	98	19	AAW50089	Human chorionic go	312	226	29.1	132	20	AAW99500	hTSH-beta analog
240	509	65.5	98	19	AAW50054	Human chorionic go	313	225	29.0	132	20	AAW99504	Glycoprotein hormo
241	507	65.3	93	22	AAU04621	Human chorionic go	314	224	28.8	45	8	AAW99504	Sequence of the C-
242	507	65.3	93	22	AAU04621	Human chorionic go	315	224	28.8	46	3	AAW99504	HCG analogue. Rom
243	505	65.0	237	16	AAE04523	Partially deglycos	316	224	28.8	112	14	AAW99504	Human thyroid stim
244	505	65.0	237	16	AAE04523	Human single chain	317	224	28.8	129	20	AAW99497	Glycoprotein hormo
245	498	64.1	117	17	AAE04523	Modified hCG beta	318	222	28.6	129	20	AAW99499	Glycoprotein hormo
246	498	64.1	117	17	AAE04523	HCG/hTSH chimera	319	222	28.6	129	20	AAW99499	Glycoprotein hormo
247	496.5	63.9	123	16	AAE04523	Single chain gonad	320	222	28.6	223	22	AAW04610	Human single chain
248	492	63.3	237	16	AAE04523	Human chorionic go	321	222	28.6	223	22	AAE04482	Partially deglycos
249	488	62.8	88	22	AAE04523	Human CG beta subu	322	222	28.6	226	16	AAE04516	Single chain gonad
250	468	60.2	151	20	AAE04523	Equine chorionic g	323	222	28.6	226	16	AAE04516	Human single chain
251	457.5	58.9	149	14	AAE04523	Human beta-hCG pro	324	222	28.6	46	16	AAE04516	hTSH-beta analog
252	457	58.8	88	19	AAW47495	Human chorionic go	325	221	28.4	111	22	AAE04516	Human FSH-beta sub
253	457	58.8	88	19	AAW50050	Human chorionic go	326	221	28.4	111	22	AAE04516	Human FSH-beta sub
254	457	58.8	88	19	AAW50052	Human chorionic go	327	220	28.3	111	22	AAE04516	Human FSH-beta sub
255	448	57.7	149	14	AAE04523	Equine chorionic g	328	219	28.2	111	22	AAE04516	Human FSH-beta sub
256	447.5	57.6	169	19	AAE04523	Equine chorionic g	329	218	28.1	129	20	AAE04516	Human FSH-beta sub
257	447.5	57.6	169	19	AAE04523	Equine chorionic g	330	218	28.1	129	20	AAE04516	Human FSH-beta sub
258	447.5	57.6	169	19	AAE04523	Equine chorionic g	331	218	28.1	129	20	AAE04516	Human FSH-beta sub
259	447.5	57.6	169	19	AAE04523	Equine chorionic g	332	218	28.1	129	20	AAE04516	Human FSH-beta sub
260	447.5	57.6	169	19	AAE04523	Equine chorionic g	333	217	27.9	111	22	AAE04516	Human FSH-beta sub
261	447.5	57.6	169	19	AAE04523	Equine chorionic g	334	217	27.9	111	22	AAE04516	Human FSH-beta sub
262	439	56.5	139	12	AAE04511	Bovine lutropin be	335	217	27.9	111	22	AAE04516	Human FSH-beta sub
263	439	56.5	141	22	AAE04511	hCG/hFSH chimera	336	217	27.9	111	22	AAE04516	Human FSH-beta sub
264	436	56.1	115	12	AAE04511	hCG/hFSH chimera	337	217	27.9	111	22	AAE04516	Human FSH-beta sub
265	436	56.1	115	12	AAE04511	hCG/hFSH chimera	338	217	27.9	129	20	AAE04516	hTSH-beta analog
266	436	56.1	115	12	AAE04511	hCG/hFSH chimera	339	217	27.9	129	20	AAE04516	Single chain gonad
267	433.5	55.8	85	20	AAE04516	Equine chorionic go	340	217	27.9	129	20	AAE04516	Single chain gonad
268	429.5	55.3	139	19	AAE04516	Equine chorionic go	341	217	27.9	129	20	AAE04516	Single chain gonad
269	429	55.2	141	22	AAE04516	Equine chorionic go	342	217	27.9	129	20	AAE04516	Single chain gonad
270	425	54.7	141	22	AAE04516	Equine chorionic go	343	217	27.9	129	20	AAE04516	Single chain gonad
271	422	54.3	138	22	AAE04516	Equine chorionic go	344	217	27.9	129	20	AAE04516	Single chain gonad
272	420.5	54.1	137	19	AAE04516	Equine chorionic go	345	216	27.8	111	22	AAE04516	Single chain gonad
273	420	54.1	131	19	AAE04516	Equine chorionic go	346	216	27.8	111	22	AAE04516	Single chain gonad
274	420	54.1	134	19	AAE04516	Equine chorionic go	347	216	27.8	111	22	AAE04516	Single chain gonad
275	415	53.4	139	7	AAE04516	Equine chorionic go	348	216	27.8	111	22	AAE04516	Single chain gonad
276	415	53.4	139	7	AAE04516	Equine chorionic go	349	216	27.8	111	22	AAE04516	Single chain gonad
277	415	53.4	139	7	AAE04516	Equine chorionic go	350	216	27.8	111	22	AAE04516	Single chain gonad
278	415	53.4	139	7	AAE04516	Equine chorionic go							
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303	415	53.4	139	7	AAE04516	Equine chorionic go							

ALIGNMENTS

RESULT 1  
ID AAY92000 standard; Protein; 140 AA.  
AC AAY92000;  
XX 19-JUL-2000 (first entry)  
DT Human chorionic gonadotropin.  
DX human chorionic gonadotropin.  
KW human chorionic gonadotropin; beta subunit; CKGP; mutant;  
KW cystine knot growth factor; hairpin loop; thyroid stimulating hormone;  
KW TSH; hypothyroidism; thyroid cancer.  
OS Homo sapiens.  
XX  
XX Key Location/Qualifiers  
XX Disulfide-bond 9..57  
XX Domain 8..33  
XX /label= beta\_hairpin\_loop\_1  
XX Misc-difference 1..37

FT /note= "mutant optionally comprises one  
 FT or more substitutions in these residues"  
 FT Disulfide-bond 34..88  
 FT Disulfide-bond 38..90  
 FT Domain 58..87  
 FT /label= beta\_hairpin\_loop\_3  
 XX WO200017360-A1.  
 XX 30-MAR-2000.  
 XX 19-MAR-1999; 99WO-US05908.  
 XX 22-SEP-1998; 98WO-US19772.  
 XX (UTMA-) UNIV MARYLAND BALTIMORE.  
 XX Weintraub BD, Szudlinaki MW;  
 XX WPI; 2000-283585/24.  
 XX New mutant cystine knot growth factor proteins comprising one or more  
 XX mutant subunits, useful for treating or preventing diseases e.g.  
 XX hypothyroidism and thyroid cancer  
 XX Claim 67; Page 296; 320pp; English.  
 XX This is the wild type human chorionic gonadotropin beta subunit. Mutants  
 XX comprise at least one electrostatic charge altering mutation in a beta  
 XX hairpin loop, resulting in increased bioactivity.  
 XX Mutant subunits and growth factor (CKGF) proteins, comprising one or more  
 XX mutant subunits and having reduced biological activity, are claimed.  
 XX properties, compared to wild type CKGFs, are claimed. The CKGF  
 XX superfamily comprises at least four families of growth factors: the  
 XX glycoprotein hormones, the platelet-derived growth factor (PDGF) family,  
 XX the neurotrophins and the transforming growth factor-beta family; the  
 XX families are known to be structurally similar (especially comprising the  
 XX cystine knot topology) and it was shown that mutations at certain  
 XX positions in the CKGF hairpin loops of family members and other members  
 XX of the CKGF superfamily could significantly alter the biological  
 XX activities of the CKGF.  
 XX Mutant subunits and growth factor (CKGF) proteins, comprising one or more  
 XX mutant subunits, useful for treating or preventing diseases e.g. They  
 XX can be administered to treat or prevent hypothyroidism. They  
 XX are also useful to treat or diagnose thyroid cancer, by administering the  
 XX mutant heterodimer or analogue to stimulate iodine uptake, and  
 XX subsequently administering radiolabeled iodine to treat the cancer or  
 XX enable radiolabel detection (claimed).  
 XX Sequence 140 AA:  
 Query Match 99.1%; Score 770; DB 21; Length 140;  
 Best Local Similarity 100.0%; Pred. No. 1.7e-62;  
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
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 Db 1 SKEPLAPRCPINATLAVKEGCPVCITNTTICAGYCTMTVRVLOGVLPALPQVNCNR 60  
 OY 62 DVRFESTILPCGPGVNPVYAVALSQCACRCRSTTDCGPKDHPILTCDDPRFDSSS 121  
 Db 61 DVRFESTILPCGPGVNPVYAVALSQCACRCRSTTDCGPKDHPILTCDDPRFDSSS 120  
 OY 122 SKAPPSLPSPSLRPGSDT 141  
 Db 121 SKAPPSLPSPSLRPGSDT 140  
 RESULT 2  
 AAW93434  
 ID AAW93434 standard; peptide: 145 AA.  
 XX  
 XX AAW93434;  
 XX

DT 11-JUN-1999 (first entry)  
 XX Human hCG beta-subunit peptide structure I.  
 XX Human chorionic gonadotropin; beta subunit; antigenic peptide; hCG;  
 KW contraceptive; vaccine; fertility; polyclonal antisera; diagnostic;  
 KW immunogen; human luteinising hormone.  
 XX Homo sapiens.  
 XX US5891992-A.  
 XX 06-APR-1999.  
 XX 06-JUN-1995; 95US-0467569.  
 XX 07-AUG-1989; 89US-0390530.  
 XX 04-DEC-1985; 85US-0804642.  
 XX 17-AUG-1987; 87US-0086401.  
 XX 06-OCT-1992; 92US-0938601.  
 XX 06-JUN-1995; 95US-0467569.  
 XX (OHIS ) UNIV OHIO STATE RES FOUND.  
 XX Stevens VC;  
 XX WPI; 1999-253928/21.  
 XX Synthetic antigenic peptides from human chorionic gonadotropin  
 XX beta-subunit  
 XX Disclosure; Column 19; 80pp; English.  
 XX This invention describes novel synthetic antigenic peptides (A) based  
 XX on the human chorionic gonadotropin (hCG) beta-subunit. These peptides  
 XX have contraceptive properties and are used for the development of  
 XX vaccines used to control fertility in animals and to generate  
 XX polyclonal antisera for diagnostic use. The peptides are more specific  
 XX immunogens than corresponding unmodified peptides from hCG beta-subunit,  
 XX i.e. they do not elicit antibodies that cross-react with human  
 XX luteinising hormone.  
 XX Sequence 145 AA;  
 Query Match 99.1%; Score 770; DB 20; Length 145;  
 Best Local Similarity 100.0%; Pred. No. 1.8e-62;  
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 OY 2 SKEPLAPRCPINATLAVKEGCPVCITNTTICAGYCTMTVRVLOGVLPALPQVNCNR 61  
 Db 1 SKEPLAPRCPINATLAVKEGCPVCITNTTICAGYCTMTVRVLOGVLPALPQVNCNR 60  
 OY 62 DVRFESTILPCGPGVNPVYAVALSQCACRCRSTTDCGPKDHPILTCDDPRFDSSS 121  
 Db 61 DVRFESTILPCGPGVNPVYAVALSQCACRCRSTTDCGPKDHPILTCDDPRFDSSS 120  
 OY 122 SKAPPSLPSPSLRPGSDT 141  
 Db 121 SKAPPSLPSPSLRPGSDT 140  
 RESULT 3  
 AAW95520  
 ID AAW95520 standard; protein: 145 AA.  
 XX  
 XX AAW95520;  
 XX  
 XX 24-MAR-1999 (first entry)  
 XX Human chorionic gonadotropin (hCG) beta subunit.  
 XX Human chorionic gonadotropin; hCG; three-dimensional; 3D; analogue;  
 KW molecular simulation; visual display; chemical structure; growth factor;

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spector-09-813398.pep

**Page 1**

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T1

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Fri Oct 11 17:02:50 2002

spector-09-813398.pcp

Page 3

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09-813398-12  
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T1

GenCore version 5.1.3  
Copyright (c) 1993 - 2002 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: October 11, 2002, 10:56:18 : Search time 25 seconds  
(without alignments)  
218.378 Million cell updates/sec

Title: US-09-813-398-3

Perfect score: 777

Sequence: 1 PSKEPLRPRCPINATLAVE.....SKAPPLSPSPRLPQPSDT 141

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues

Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Hit 100%

Listing first 50 summaries

Database : SwissProt\_40.\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Query Match	Score	Length	ID	Description
1	770	99.1	165	1 CCHB_HUMAN	P01233 homo sapien
2	629	81.0	165	1 CCHB_PAPAN	P07434 papio anubi
3	544	70.0	141	1 LSHB_HUMAN	P01229 homo sapien
4	499.5	64.3	164	1 CCHB_CALJA	P51500 callithrix
5	476.5	61.3	169	1 LSHB_EQUUS	O46641 equus burch.
6	463	59.6	169	1 LSHB_EQUAS	P19794 equus asinu
7	448	57.7	143	1 LSHB_FELCA	O77805 felis silve
8	443.9	56.5	169	1 LSHB_HORSE	P08721 equus cabal
9	439	56.1	141	1 LSHB_HUMAN	P01230 Pottius
10	436	56.1	141	1 LSHB_BAT	O77835 ceratotheri
11	430	55.3	141	1 LSHB_CERSI	P01232 sus scrofa
12	429	55.2	141	1 LSHB_PIG	P01231 ovis aries
13	429	55.2	141	1 LSHB_SHEEP	O09108 mus musculu
14	425	54.7	141	1 LSHB_MOUSE	P18842 canis famil
15	422	54.3	138	1 LSHB_CANFA	O46641 equus burch.
16	409	52.6	128	1 LSHB_PHOSU	Q9qva9 phodopus su
17	407	52.4	118	1 LSHB_BALAC	P33088 balaenopter
18	406	52.3	118	1 LSHB-PHYCA	P25330 physeter ca
19	402	51.7	138	1 LSHB-MACRU	O46483 macropus ru
20	397	50.6	141	1 LSHB-TRIVU	O46482 trichosurus
21	393	50.6	141	1 LSHB-TRIVU	O46482 carassius a
22	393	50.6	141	1 LSHB-TRIVU	O46482 carassius a
23	393	50.6	141	1 LSHB-TRIVU	O46482 carassius a
24	393	50.6	141	1 LSHB-TRIVU	O46482 carassius a
25	292	37.6	146	1 GTH2_CTEID	P37038 bteneophthal
26	289	37.2	138	1 GTH2-ONCKE	P30984 cteneopharyn
27	289	37.2	142	1 GTH2-CLAGA	P10256 oncorhynch
28	282	36.3	149	1 GTH2-CLUPA	P48253 oncorhynch
29	279	35.9	142	1 GTH2-ONCTS	Q9ygh2 clupea pall
30	276.5	35.6	113	1 GTH2-MURCI	P07732 oncorhynch
31	274	35.3	142	1 GTH2-CORAN	P48251 coregonus a
32	273	35.1	140	1 GTH2-ANGAN	P27767 anguilla an
33	269	34.6	128	1 LSHB_STRCA	P00664 struthio ca

#### ALIGNMENTS

RESULT 1	CGHB_HUMAN	STANDARD;	PRT;	165 AA.
AC	P01233: Q14000, Q13951;			
AC	P01233: Q14000, Q13951;			
DT	21-JUL-1988 (Rel. 01, Last sequence update)			
DT	16-OCT-2001 (Rel. 40, Last annotation update)			
DE	Choriongonadotropin beta chain precursor (Chorionic gonadotropin beta subunit) (CG-beta).			
GN	CGB.			
OS	Homo sapiens (Human).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.			
OX	NCBI_Taxid=9606;			
RA	SEQUENCE FROM N.A.			
RP	MEDLINE=81012134; PubMed=6774259;			
RT	Fiddes J.C., Goodman H.M.;			
RT	"The cDNA for the beta-subunit of human chorionic gonadotropin suggests evolution of a gene by readthrough into the 3'-untranslated region."			
RL	Nature 286:684-687(1980).			
RP	SEQUENCE FROM N.A.			
RP	MEDLINE=84093590; PubMed=6690982;			
RA	Talmadge K., Panakopoulos N.C., Fiddes J.C.;			
RT	Evolution of the genes for the beta subunits of human chorionic gonadotropin and human placentalizing hormone."			
RL	Nature 307:37-40(1984).			
RP	SEQUENCE FROM N.A.			
RP	MEDLINE=84008141; PubMed=6194155;			
RA	Pollicastro P., Ovitt C.E., Hoshina M., Fukuoka H., Boothby M.R.,			
RT	Boime I.;			
RT	"The beta subunit of human chorionic gonadotropin is encoded by multiple genes."			
RL	J. Biol. Chem. 258:11492-11499(1983).			
RP	SEQUENCE OF 1-20.			
RP	MEDLINE=81117268; PubMed=7462224;			
RA	Birken S., Fetherston J., Canfield R.E., Boime I.;			
RT	"The amino acid sequences of the prepeptides contained in the alpha and beta subunits of human chorionic gonadotropin."			
RL	J. Biol. Chem. 256:1816-1823(1981).			
RP	SEQUENCE OF 21-165.			
RP	MEDLINE=75211304; PubMed=1150658;			
RA	Morgan F.J., Birken S., Canfield R.E.;			
RT	"The amino acid sequence of human chorionic gonadotropin. The alpha subunit and beta subunit."			
RL	J. Biol. Chem. 250:5247-5258(1975).			

34	265	34.1	112	1	LSHB_RANCA	P80071 rana catesb
35	259.5	33.4	137	1	GTH2_AICAL	O90225 acanthopagr
36	258	33.2	166	1	LSHB_COTJA	P43657 coturnix co
37	255	32.8	139	1	GTH2_MORSA	O91121 morone saxa
38	253	32.8	159	1	LSHB-TRIC	P45648 trichostict
39	252	32.7	138	1	LSHB-MELGA	P54828 canis famil
40	254	32.7	138	1	TSHB-ANGIA	O9ygh2 anguilla ja
41	253	32.6	127	1	GTH1_THUOB	P37208 thunnus obe
42	252	32.4	115	1	GTH2_BOVIN	P01223 bos taurus
43	243	31.3	138	1	TSHB_HUMAN	P01222 sus scrofa
44	243	31.3	138	1	TSHB_PIG	Q28376 equus cabal
45	242	31.1	138	1	TSHB_HORSE	P12656 mus musculu
46	241	30.9	138	1	TSHB_MOUSE	P79357 lama glama
47	240	30.8	138	1	TSHB_LAMGL	P46322 rattus norv
48	239	30.8	138	1	TSHB_RAT	O13050 cyprinus ca
49	239	30.8	138	1	TSHB_RAT	
50	234	30.1	130	1	GTH1_CTFCA	

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DR	EMBL:	K01892;	AA53287.1; JOINED.
DR	PIR:	A01502;	KTHUB.
DR	PDB:	IUCN;	30-SEP-94.
DR	PDB:	HRRP;	01-NOV-94.
DR	PDB:	IXUL;	15-MAY-97.
DR	GlycoSuiteDB:	P01233;	-
DR	MIM:	118860;	-
DR	InterPro:	IPR000359;	Cys_knot.
DR	InterPro:	IPR021400;	Gf-Cysknot.
DR	InterPro:	IPR000359;	Glyco_hormone_beta.
DR	PROSITE:	PS00068;	Cys_knot.
DR	PRINTS:	PR00438;	GCYSKNOT.
DR	SMART:	SM00068;	GBB: 1.
DR	PROSITE:	PS00261;	GLYCO_HORMONE_BETA_1; 1.
DR	PROSITE:	PS00689;	GLYCO_HORMONE_BETA_2; 1.
KW	Hormone;	Glycoprotein;	Signal; Pharmaceutical; 3D-structure.
FT	SIGNAL	1..120	CHORIOGONADOTROPIN BETA CHAIN.
FT	CDRH1ID	23..115	
FT	CDRH2ID	23..97	
FT	DISULFID	43..92	
FT	DISULFID	46..130	
FT	DISULFID	54..108	
FT	DISULFID	58..110	
FT	DISULFID	113..120	
FT	CARBOHYD	33..33	N-LINKED (GLCNAC. .).
FT	CARBOHYD	50..50	/FTID-CAR_000042. .).
FT	CARBOHYD	141..141	N-LINKED (GLCNAC. .).
FT	CARBOHYD	147..147	/FTID-CAR_000043. .).
FT	CARBOHYD	152..147	O-LINKED.
FT	CARBOHYD	152..152	O-LINKED.
FT	CARBOHYD	158..158	O-LINKED.
FT	VARIANT	137..137	D -> A (IN GENE 6).
FT	CONFLICT	24..24	/FTID-VAR_003188.
FT	SEQUENCE	165 AA;	P -> M (IN REF. 3; AA53287).
FT	SEQUENCE	17739 MM;	5598F89E51A05748 CRC64;
Query Match		99.1%;	Score 770; DB 1; Length 165;
Best Local Similarity		100.0%;	Pred. No. 5,1e-64;
Matches 140;	Conservative	0;	Mismatches 0; Indels 0; Gaps 0;
QY	2	SKELPRRCRPINATLAVEKGCPVCITVTTCITAGCYCTPTRTVLQGVLPALPVQVCNTR	61
DB	21	SKELPRRCRPINATLAVEKGCPVCITVTTCITAGCYCTPTRTVLQGVLPALPVQVCNTR	80
QY	63	DVFRESFLDCGRGNVPVSVAVALSOCALCRSTTDCGGCKDHUICDPDRPDSSS	121
DB	81	DVFRESIRLPGCGNPVVSVAVALSCQALCRSTTDCGGFKDHLPTCDPRPDSSS	140
QY	122	SKAPPPSLSPSRLPFGSDT	141
DB	141	SKAPPPSLSPSRLPFGSDT	160
RESULT 2			
CGHB_PAPAN	STANDARD;	PRT;	165 AA.
ID	CGHB_PAPAN	PRT;	165 AA.
AC	P07434;		
DT	01-APR-1988 (Rel. 07, Created)		
DT	01-APR-1988 (Rel. 07, Last sequence update)		
DE	16-OCT-2001 (Rel. 40, Last annotation update)		
DE	Choriongonadotropin beta chain precursor (Chorionic gonadotrophin beta subunit) (CG-beta).		
GN	CGB.		
OC	Fetoanto rubis (Olive baboon).		
OC	Eukaryota; Metazoa; Chordata;		
OC	Mammalia; Eutheria; Primates; Catarrhini;		
OC	Cercopitheciidae; Papio.		
OC	NCBI_TaxId=9555;		
RN	[1]		
RN	SEQUENCE FROM N.A.		

01-NOV-1995 (Rel. 32, Last sequence update)  
 DT 16-OCT-2000 (Release 40, Last annotation update)  
 DE Luteotropin beta-chain precursor (luteinizing hormone beta subunit) (LSH-  
 DE beta) (LSH-B) (LH-B).  
 OS LHB.  
 OS Homo sapiens (Human).  
 CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 CC Mammalia; Eutheria; Primates; Catarrhini; Hominiidae; Homo.  
 NCBI\_TaxID=9606;  
 RX [1]  
 SEQUENCE FROM N.A.  
 RX MEDLINE=84093590; PubMed=6690982;  
 RX Ralimonde K., Vamvakopoulos N.C., Fiddes J.C.;  
 RX gonadotropin-releasing hormone-1: the genes for the beta subunits of human chorionic  
 RX gonadotropin and human luteinizing hormone.;  
 RX Nature 307:37-40(1984).  
 RL [2]  
 SEQUENCE OF 21-141.  
 RX MEDLINE=76062547; PubMed=1191677;  
 RX Salran M.R., Li C.H.;  
 RX "Human pituitary luteotropin. Isolation, properties, and the complete  
 RX amino acid sequence of the beta-subunit.";  
 RX Biochim. Biophys. Acta 412:70-81(1975).  
 RL [3]  
 PRELIMINARY SEQUENCE OF 21-141.  
 RX MEDLINE=73090987; PubMed=4683398;  
 RX Shome B., Parlow A.F.;  
 RX "The primary structure of the hormone-specific, beta subunit of human  
 RX pituitary luteinizing hormone (hLH).";  
 RX J. Clin. Endocrinol. Metab. 36:618-621(1973).  
 RL [4]  
 PRELIMINARY PARTIAL SEQUENCE.  
 RX MEDLINE=73221227; PubMed=4719207;  
 RX Closset J., Bennen G., Lequin R.M.;  
 RX "Human luteinizing hormone. The amino acid sequence of the  
 RX beta subunit.";  
 RX FEBS Lett. 29:97-100(1973).  
 RL [5]  
 STRUCTURE OF CARBOHYDRATE.  
 RX MEDLINE=91122088; PubMed=1991473;  
 RX Weisshaar G., Hiyama J., Renvick A.G.C., Nintz M.;  
 RX "NMR investigations of the N-linked oligosaccharides at individual  
 RX glycosylation sites of human lutropin.";  
 RX Eur. J. Biochem. 195:257-268(1991).  
 RL [6]  
 STRUCTURE BY NMR OF 58-77.  
 RX MEDLINE=92357029; PubMed=1495492;  
 RX Schumann H.T., Hua O.-X., Weiss M.A.;  
 RX "The structure of the receptor-binding fragment from human luteinizing  
 RX hormone beta-subunit determined by <sup>1</sup>H- and <sup>13</sup>C nuclear magnetic  
 RX resonance spectroscopy.";  
 RX Mol. Endocrinol. 6:904-913(1992).  
 RL [7]  
 VARIANT ARG-74.  
 RX MEDLINE=92085985; PubMed=1727547;  
 RX Weiss J.J., Axelrod L.W., Whitcomb R.W., Harris P.E., Crowley W.F.,  
 RX Jameson J.L.;  
 RX "Hypogonadism caused by a single amino acid substitution in the beta  
 RX subunit of luteinizing hormone.";  
 RX New Engl. J. Med. 326:179-183(1992).  
 CC -1- LUTROPIN PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING  
 CC THE RELEASE OF ANDROGENS TO SYNTHESIZE STEROIDS.  
 CC -1- SUBUNIT HYDROPHOBIC, WITH A HYDROPHILIC CHAIN AND A UNIQUE BETA  
 CC CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THIROTOPIN,  
 CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.  
 CC -1- TISSUE SPECIFICITY: PITUITARY.  
 CC -1- DISEASE: DEFECTS IN LHB ARE A CAUSE OF HYPOGONADISM WHICH IS  
 CC CHARACTERIZED BY INFERTILITY AND PSEUDOHENAPHOIDITISM.  
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN  
 CC FAMILY.  
 CC -----  
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EMBL	Y00256	CA25067.1	..
EMBL	S71273	ADN1960.1	ALT_SEQ.
PIR	A01497	UTHUB	
HSSP	P01233	1XUL	
GlycoSuiteDB	P01229	..	
MM	152780	..	
IncePro	IPR000159	Cys_knot.	
IncePro	IPR000159	Cys_knot.	
IncePro	IPR001945	Glyc_hormone_beta.	
Pfam	PF000007	Cys_knot.1	
PRINTS	PR00438	GFCYSKNOT.	
SMART	SM00068	GHB	1.
PROSITE	PS00361	GLYCO_HORMONE_BETA.1.1.	
PROSITE	PS00368	GLYCO_HORMONE_BETA.2.1.	
Homol.	G30000	Protein, Signal, Pseudohemaphroditism; Disease mutation.	

	1	20	LUTROPIN BETA CHAIN.
FT	21	141	BY SIMILARITY.
CHAIN	29	77	BY SIMILARITY.
DISULFID	43	92	BY SIMILARITY.
FT	46	130	BY SIMILARITY.
FT	54	108	BY SIMILARITY.
FT	58	110	BY SIMILARITY.
FT	61	120	BY SIMILARITY.
FT	113	110	N-LINKED GLUCNAC. . ).
FT	50	50	OF TIC-CAR-000045:
CARBORIO			RECEPTOR HYPOGNOSISM; LACK OF
VARIANT	74	74	RECEPTOR-SI-003189.
			/FT14-VAR-003189.
FT	39	39	E -> O (IN REF. 2).
CONFLICT	76	76	MISSING (IN REF. 2).
FT	132	135	HPOL -> POH (IN REF. 2).
CONFLICT	132	135	
SEQUENCE	141 AA:	15345 MW:	BALI766253111P7C.CRC64:
SO			

Query Match	70.0%	Score 544:	DB 1:	Length 141:
Sequence Similarity	85.1%	Percent	Matches	
Matches	97:	Conservative	11:	Indels 0: Caps 0:
2	SKLEPRLRCRPNATLAVKEGKPCVICTNTTTCAGCYCFMTRVLQGVLPALPOVCHNR	61		
20	SKLEPRLRCRPNATLAVKEGKPCVICTNTTTCAGCYCFMTRVLQGVLPALPOVCHNR	80		
62	DVRFSTRPLCGPGRGVDPVSPFVALSCGCGPCRSRSTSDGCGPKDPLTCDHPQ	115		
81	DVRFSTRPLCGPGRGVDPVSPFVALSCGCGPCRSRSTSDGCGPKDPLTCDHPQ	134		

RESULT 4			
ID	CGHH.CALJA	STANDARD;	PRT; 164 AA.
AC	AC	P51500:	
DT	DT	01-OCT-1996 (Rel. 34, Created)	
DT	DT	01-OCT-1996 (Rel. 34, Last sequence update)	
DT	DT	16-OCT-2001 (Rel. 40, Last annotation update)	
DE	DE	Chorogonadotropin beta chain precursor	
DE	DE	subunit (CG-beta).	

COB.	<i>Calitrix iacchus</i> (Common marmoset).
GR	<i>Macaca</i> .
MS	<i>Saguaya, Metacoa</i> ; Chordata; Craniata; Vertebrata; Euteleostomi;
OC	<i>Walleria</i> ; Eutheria; Primates; Placentalia; Calitrichidae;
OC	<i>Calitrix</i> .
OC	<i>NCBI_TaxId=9483</i> ;
OC	{1}
OC	SEQUENCE FROM N.A.
OC	TISSUE=Placenta;
OC	MEDLINE=96115012; PubMed=7492691;
OC	Simula A.P., Amato F., Faast R., Lopata A., Berka J., Norman R.J.;

\*lutelutizing hormone/chorionic gonadotropin bioactivity in the common  
maternal and fetal placenta according to the placental origin  
with a significant intermediate between human chorionic  
gonadotropin and human lutelutizing hormone.\*;  
Biol. Reprod. 53:380-389(1995).

-1- FUNCTION: STIMULATES THE OVARIES TO SYNTHESIZE THE STEROIDS THAT  
ARE ESSENTIAL FOR THE MAINTENANCE OF PREGNANCY.

-1- SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA  
CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,  
LUTROPIN, FOLLITROPIN AND GONADOTROPIN.

-1- ISSUE SPECIFICITY: PLACENTA.

-1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN  
FAMILY.

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or send an email to [license@sib.ch](mailto:license@sib.ch)

EMBL:	P04447;	AAC000039.1	:	
DR	HSP:	I04233;	1XUL	Cys_knot.
DR	InterPro:	IPR003400;	GF_Cys_knot.	
DR	InterPro:	IPR001545;	Glyco_hormone_beta.	
DR	Pfam:	PF00007;	Cys_knot.1	
DR	PRINTS:	PR00438;	GFCSYKNOT.	
DR	SMART:	SM00068;	GHB;	1.
DR	PROSITE:	PS00261;	GLYC_HORMONE_BETA_1;	1.
DR	PROSITE:	PS00689;	GLYC_HORMONE_BETA_2;	1.
DR	Hormone:	Glycoprotein;	Signal:	
KW	SIGNAL:	21	64	BY SIMILARITY.
FT	DISULFID	29	77	CHORIOGNATHOTROPIN BETA CHAIN.
FT	DISULFID	43	92	BY SIMILARITY.
FT	DISULFID	46	130	BY SIMILARITY.
FT	DISULFID	54	108	BY SIMILARITY.
FT	DISULFID	58	110	BY SIMILARITY.
FT	DISULFID	113	120	BY SIMILARITY.
FT	CARBHYD	50	50	N-LINKED (GLCNAC...)
FT	CARBHYD	131	131	O-LINKED (BY SIMILARITY).
FT	CARBHYD	151	151	O-LINKED (BY SIMILARITY).
SO	SEQUENCE	164	AA;	QCDP2EDDC2618PAE CRC64;

	Query Match	64.3%	Score 199.5	DB 1	Length 164
	Best Local Similarity	66.9%	Ref. No. 3.2e-39		
	Matches 93	Conservative 15	Mismatches 30	Indels 1	Gaps 1
Qy	2	SKEPLRPRCPINATLVAERQPCVCTVTNTTCAGCYCPMTFVGLVCLPALPQVCNVR	61		
Db	21	SKEPLRLCRPVNALAAERQPCVCAETNTTCAGCYCSNNRVLATILPLPQVSCNVR	80		
Qy	62	DYRFSIRLPCPCRGVNPVSTAVALSOCALCRSTTTCGGCPGHLPTCDPFRQSSS	121		
Db	81	ELRFTSVRLPCRGVNPVSTAVALSOCALCRSTTTCGGCPGHLPTCDPFRQSSS	139		
Qy	122	SKAPPSPSLRSPRGSD	140		
Db	140	SKDPPRLTSPSLLEPAD	158		

RESULT 5	LSH-EQUUBU	STANDARD:	PRT: 169 AA.
AD	Q5661		
DT	15-DEC-1998 (Rel. 37, Created)		
DT	15-DEC-1998 (Rel. 37, Last sequence update)		
DT	15-JUL-1999 (Rel. 38, Last annotation update)		
DE	Lutropin/chorionadotropin beta chain precursor (Lutening hormone beta subunit).		
GN	LHB.		

**EQUUS BURCHELLI** (*Plains zebra*) (*Equus quagga*).  
OS Eukaryote; Mammalia; Chordata; Cranialia; Vertebrata; Euteleostomi;  
OC Nomenclature; Embryos; Perissodactyla; Equidae; Equus.  
OC NCBI\_Taxid=9790.

[1]  
RN SEQUENCE FROM N.A.  
RC TISSUE=Pituitary;  
RA Chopineau M., Martinat N.; Guillou F.; Pourchet C.;  
RL Submitted (JAN-1998) to the EMBL/GenBank/DDAJ databases.  
RR -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING  
THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.  
CC SHOWN WHICH CONFERRED A COMMON ALPHA CHAIN AND A UNIQUE BETA  
CC CHAIN WHICH CONFERRED SPECIFICITY TO THYROTROPIN.  
CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.  
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN  
CC FAMILY.

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CC entitles requires a license agreement (see http://www.lsb-sib.ch/commercial/  
CC or send an email to licensee@lsb-sib.ch).

CC EMBL; Y16265; CAA76146.1; -  
DR HSPG; P01233; IXDL.  
DR InterPro: IPR000359; Cys\_knot.  
DR InterPro: IPR000360; R\_Cys\_knot.  
DR InterPro: IPR001546; Glyco\_hormone\_beta.  
DR Pfam: PF00007; Cys\_knot.  
DR PRINTS: PR00438; GFCSKNKT.  
DR SMART: SMO0068; GHB; 1.  
DR PROSITE: PS00261; GLYCO\_HORMONE\_BETA\_1; 1;  
DR PROSITE: PS00689; GLYCO\_HORMONE\_BETA\_2; 1;  
SW Hormone; Glycoprotein; Signal.  
FW SIGNAL 1 20  
FT CHAR 1 197  
FT DISULFID 29 197  
FT DISULFID 43 92  
FT DISULFID 46 130  
FT DISULFID 54 108  
FT DISULFID 58 110  
FT DISULFID 113 120  
FT CARBOHYD 33 33  
FT CARBOHYD 138 159  
SQ N-LINKED (GLCNAC... ) (POTENTIAL).  
SEQUENCE 169 AA; 17824 MW; 32ZDPF74AGNAP3E9 CRC64;

Query Match 61.3%; Score 476.5; DB 1; Length 169;  
Best Local Similarity 62.4%; Pident No. 4.3e-17;  
Matches 88; Conservative 15; Mismatches 33; Indels 5; Gaps 2;

OY 2 SKPELRPCRPINATIAVEKSGPVCIWTWTCAGCTPMRVLGQVLPALQVVQCYNR 61  
DB ::::||||| ||||| |:::| ::::| ::::| ::::| ::::| ::::| :::  
21 SGPLRFLCPINATAAEKACPICITPTTGACGCGPNVRMPAALPPIPQVCYTR 80  
OY 62 DVFFSRILPGCPGVNYSTVAVALSSCCLAGRSTTDCGGGWKLHLCDDPFQDSSS 121  
DB ::||| ||||| ||||| ::||| ::||| ::||| ::||| ::||| ::||| ::|||  
81 ELRFASIRLPGCPPGDVDMYSVFVALSCHGCRKLRLTTCGGPDHPMLCAP--QAASS 137

OY 122 SKAPP--PSLPSSRIPLGPSTD 140  
DB ||||| |:::| ::||| ::||| ::||| ::||| ::||| ::||| ::|||  
OY 138 SKDPFSQPDTSTRTSPGCASN 158  
DB ||||| |:::| ::||| ::||| ::||| ::||| ::||| ::||| ::|||

RESULT 6  
LSHB\_EQUAS STANDARD; PRT; 169 AA.  
ID LSHB-EQUAS  
CAC P19794;  
AC 01-FEB-1991 (Rel. 17, Created)  
DAT 01-NOV-1995 (Rel. 32, Last sequence update)  
TOT 15-JUL-1999 (Rel. 38, Last annotation update)  
Lutropin/chorionadotropin beta chain precursor (LSH-B/CG-B)

(luteinizing hormone beta subunit).

Enxus asinus (Donkey).  
Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;  
Mammalia; Eutheria; Perissodactyla; Equidae; Equus.  
NCBI\_TaxId=9793;  
[1]  
SEQUENCE FROM N.A.  
R1 Chopineau M., Combarnous Y., Allen W.R., Stewart F.;  
AL Submitted (Jul-1994) to the EMBL/GenBank/DBJ databases.  
R2  
R3  
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R677

RESULT 7

ID	LSHB_FELCA	STANDARD:	PRT:	143 AA.
AC	077805;			
DC	16-OCT-2001 (Rel. 40, Created)			
DT	16-OCT-2001 (Rel. 40, Last sequence update)			
DE	16-OCT-2001 (Rel. 40, Last annotation update)			
DD	Lutropin beta chain precursor (Lutealizing hormone beta subunit) (LSH-beta) (LSH-B) (LH-B).			
GN	LHB.			
OS	Felis silvestris catus (Cat).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OM	Mammalia; Eutheria; Carnivora; Fissipedia; Felidae; Felis.			
RA	LSHB_Taxid-9685;			
RE	SEQUENCE FROM N.A.			
RC	TISSUE=pituitary;			
PK	Pukazenthli B.S., Varma G.M., Brown J.L.;			
RA	"Molecular cloning and sequence analysis of the cDNA for the feline			
RT	lutealizing hormone beta subunit."			
RL	Submitted (SEP-1998) to the EMBL/Genbank/DBSJ databases..			
CC	-1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING			
CC	THE RELEASE OF LUTEALIZING HORMONE FROM THE ANTERIOR PITUITARY			
CC	-1- SUBUNIT: RETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA			
CC	CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN.			
CC	LUTROPIN, FOLLITROPIN AND GONADOTROPIN.			
CC	-1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN			
CC	FAMILY.			
CC	THIS SWISS-PROT entry is copyright. It is produced through a collaboration			
CC	between the Swiss Institute of Bioinformatics and the EMBL outstation			
CC	at the University of Cambridge. The copyright is held by the EMBL outstation			
CC	use by non-profit institutions as long as its content is not modified and			
CC	modified and this statement is not removed. Usage by for commercial			
CC	entities requires a license agreement (see <a href="http://www.lsb-sib.ch/announce/">http://www.lsb-sib.ch/announce/</a>			
CC	or send an email to <a href="mailto:license@lsb-sib.ch">license@lsb-sib.ch</a> ).			
DR	EMBL: AF095716; MAF64196.1; ..			
DR	HSP; PF01333; XfUL.			
DR	InterPro: IPR001545; Cys_knot.			
DR	InterPro: IPR002400; GP_beta_knot.			
DR	InterPro: IPR001545; Glyco_hormone_beta.			
DR	Pfam: PF00007; Cys_knot; 1.			
DR	PRINTS: PR00438; GFCYSKNOT.			
DR	SMART: SM00068; GH8; 1.			
DR	PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.			
DR	PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.			
FW	Hormone; Signal; Glycoprotein.			
FT	CHAIN 21 143			
FT	DISULFID 31 79			
FT	DISULFID 45 94			
FT	DISULFID 48 132			
FT	DISULFID 56 110			
FT	DISULFID 60 112			
FT	DISULFID 115 122			
FT	CARBOHYD 35 35			
FT	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FW	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FT	CHAIN 21 143			
FT	DISULFID 31 79			
FT	DISULFID 45 94			
FT	DISULFID 48 132			
FT	DISULFID 56 110			
FT	DISULFID 60 112			
FT	DISULFID 115 122			
FT	CARBOHYD 35 35			
FT	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FW	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FT	CHAIN 21 143			
FT	DISULFID 31 79			
FT	DISULFID 45 94			
FT	DISULFID 48 132			
FT	DISULFID 56 110			
FT	DISULFID 60 112			
FT	DISULFID 115 122			
FT	CARBOHYD 35 35			
FT	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FW	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FT	CHAIN 21 143			
FT	DISULFID 31 79			
FT	DISULFID 45 94			
FT	DISULFID 48 132			
FT	DISULFID 56 110			
FT	DISULFID 60 112			
FT	DISULFID 115 122			
FT	CARBOHYD 35 35			
FT	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FW	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FT	CHAIN 21 143			
FT	DISULFID 31 79			
FT	DISULFID 45 94			
FT	DISULFID 48 132			
FT	DISULFID 56 110			
FT	DISULFID 60 112			
FT	DISULFID 115 122			
FT	CARBOHYD 35 35			
FT	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FW	SEQUENCE 143 AA; 13318 MW; 13318 MW; 13318 MW; N-LINKED (GLCNAC...)(POTENTIAL).			
FT	CHAIN 21 143			
FT	DISULFID 31 79			

RESULT 8	
LSHB	STANDARD; PRT; 169 AA.
AC	PO8751, PO1234;
AD	01-AUG-1988 (Rel. 08, Created)
DT	01-JUL-1993 (Rel. 26, Last sequence update)
DT	16-OCT-2001 (Rel. 40, Last annotation update)
DE	1- <u>luteinizing hormone gonadotropin beta chain precursor (LSH-B/CG-B)</u>
DE	( <u>luteinizing hormone beta subunit</u> ).
LSHB	
GN	<i>Equus caballus</i> (Horse).
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC	Mammalia; Eutheria; Perissodactyla; Equidae; Equus.
OX	NCBI_TaxID=9796;
XX	11-SEQUENCE FROM N.A.
XX	MEHLING-92357035; PubMed=1175674;
XX	Sherman G.B., Wolfe M.W., Farmer T.A., Clay C.M.,
RA	Threadgill D.S., Sharp D.C., Nilsson J.H.;
RA	"A single gene encodes the beta-subunits of equine luteinizing
RA	hormone and chorionic gonadotropin.*"
RL	Mol. Endocrinol. 6:951-959(1992).
RL	[2]
RP	SEQUENCE OF 21-169.
RP	MEHLING-87250476; PubMed=3298239;
RP	Bousfield G.R., Liu W.-K., Sugino H., Ward D.N.;
RA	"Structural studies on equine glycoprotein hormones. Amino acid
RL	sequence of equine lutropin beta-subunit.*"
RL	J. Biol. Chem. 262:8610-8620(1987).
[3]	
RP	SEQUENCE OF 21-169.
RP	MEHLING-87250476; PubMed=3298239.
RA	"Structural studies on equine glycoprotein hormones. Amino acid
RL	sequence of equine lutropin beta-subunit.*"
RL	J. Biol. Chem. 262:8603-8609(1987).
[4]	
RP	PARTIAL SEQUENCE.
RP	Ward D.N., Moore W.T. Jr., Burielgh B.D.;
RA	"Structural studies on equine chorionic gonadotropin.*"
RL	J. Protein Chem. 1:263-280(1982).
RP	STRUCTURE OF CARBOHYDRATES.
RP	MEHLING-90235854; PubMed=2331995;
RP	Damm J.B.L., Haard K., Kamberling J.P., van Dedem G.W.K.,
RL	Vliegenterhart J.F.G.;
RA	"Structure determination of the major N- and O-linked carbohydrate
RL	chains of the beta subunit from equine chorionic gonadotropin.*"
RL	Eur. J. Biochem. 189:175-183(1990).
[6]	
RP	O-GLYCOSYLATION.
RP	MEHLING-11113568.
XX	Bousfield G.R., Butnev V.Y., Butnev V.Y.;
RA	"Identification of twelve O-glycosylation sites in equine chorionic
RL	gonadotropin beta and equine luteinizing hormone beta by solid-phase
RL	edman degradation.*"
CC	-1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
CC	SECRETION OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CC	-1- SUBUNIT. HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CC	CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,
CC	LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
CC	-1- PTM: MICROHETEROGENEITY AT ASN-33. O-GLYCOSYLATION APPEARS TO
CC	RESPONSIBLE FOR THE BETA SUBUNIT CONTRIBUTION TO THE DIFFERENCE
CC	LN RECEPTOR-BINDING ACTIVITY BETWEEN LSH-B AND CG-B.
CC	-1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC	FAMILY.
CC	
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CC	boration between the Swiss Institute of Bioinformatics and the EMBL out-
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CC CC
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DR EMBL: S41704; A822775.1;
DR PIR: A01503; KTHOB
DR PIR: A29304; A29304.
DR PIR: A29305; A29305.
DR PIR: A41917; A41917.
DR HSSP: P01233; 1XUL.
DR GLYCSuitedB: P08751;
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR001400; GF_cysknot.
DR Pfam: PF000074; Glyco_hormone_beta.
DR PRINTS: PR000438; GFCYSKNOT.
DR SMART: SM00068; GHb; 1.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
KW Hormone; Glycoprotein; Signal.
FT CHAIN 1 20
FT DISULFID 21 169
FT DISULFID 29 77
FT DISULFID 43 92
FT DISULFID 46 130
FT DISULFID 54 108
FT DISULFID 58 110
FT DISULFID 113 120
FT CARBOHYD 33 33
FT CARBOHYD 138 138
FT CARBOHYD 143 143
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FT CARBOHYD 169 169
FT SEQUENCE 169 AA; 17865 MW; 1244ADBE843EF1A CRC64;

Query Match 57.5%; Score 447.5; DB 1; Length 169;
Best Local Similarity 60.7%; Pred. No. 1.9e-34;
Matches 85; Conservative 15; Mismatches 35; Indels 5; Gaps 2;

Oy 2 SKEPLRPRCPINATLAVKEGCPVCTVTTTCAGCPTNTRVLQGLVLPALPDVQVNR 61
Dh 1: ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
Dh 21 SRGPLRLCPINATLAAKEACPICITFTTSCAGCPSWYRWPALPAIPQVCTTR 80
Oy 62 DVRFESIRLPCPGVNVVYVAVALSCCALCRSTTDCGPKDHPITCDPRFDSSS 121
Dh ::||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
Dh 81 ELRFASIRLPCPGVDVWVSPVVALSCHPCPCQIKTTDCGVFRDQPLACAP---QASGS 137
Oy 122 SKAPP--PSLSPSRLPGPS 139
Dh 138 SKDPPSPRLTSTPTTPQAS 157

RESULT 9
LSHB_BOVIN STANDARD; PRT; 141 AA.
AC P04651;
DT 13-AUG-1987 (rel. 05, Created)
DT 01-JAN-1988 (rel. 06, Last sequence update)
DT 16-OCT-2001 (rel. 40, Last annotation update)
DE Lutropin beta chain precursor (lutalinizing hormone beta subunit) (LSH-
GN beta) (LSH-B) (LH-B).
OS Bos taurus (Bovine)
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;

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OC Bovidae; Bovinae; Bos.
OX NCBI_TaxID=9913;
RN [1]
RX SEQUENCE FROM N.A.
RX MEDLINE=85207759; PubMed=3987241;
RA Virgin J.B., Silver B.J., Thomson A.R., Nilsson J.H.;
RT "The gene for the beta subunit of bovine lutalinizing hormone encodes a secreted protein with an unusually short 5'-untranslated region.";
RL J. Biol. Chem. 260:7072-7077(1985).
RN [2]
RX SEQUENCE FROM N.A.
RX MEDLINE=85182575; PubMed=3838746;
RA Maurer R.A.;
RT "Analysis of several bovine lutropin beta subunit cDNAs reveals heterogeneity in nucleotide sequence.";
RL J. Biol. Chem. 260:4684-4687(1985).
RN [3]
RX SEQUENCE OF 21-139.
RX MEDLINE=74075724; PubMed=4770795;
RA Maguin-Rogister G., Hennen G.;
RT "Luteinizing hormone. The primary structures of the beta-subunit from bovine and porcine species.";
RL Eur. J. Biochem. 39:235-253(1973).
CC -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
CC -1- SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN.
CC -1- SIMILARITY: FOLLITROPIN AND GONADOTROPIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN FAMILY.
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Query Match 56.5%; Score 439; DB 1; Length 141;  
Best Local Similarity 65.0%; Pred. No. 9.7e-34;  
Matches 76; Conservative 14; Mismatches 27; Indels 0; Gaps 0;



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QY      2   SKEPLRPRDPTNARTAVKESGNGVCTITWTFIAGCGTTRVYLGCVLPALPOVCNTR 61
        I : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db      21   SGGLRLPRLCQP INNTLAERKAECPCVIFFTSICNGCYDSMKRVLPVLPPQRVCVTH 80
        I : : : : : : : : : : : : : : : : : : : : : : : : : : :
QY      62   VRIIESIRLGGCPGVNVVSVVALSCCALCRSRSTDCGGSPKDRILTCDDPRFD 118
        I : : : : : : : : : : : : : : : : : : : : : : : : : : :
Db      81   ELRAFASVLRGCCPGVDPMVPFVAPVSLHSGCGRLSSTDGCGTPQLACDHPLPD 137
        I : : : : : : : : : : : : : : : : : : : : : : : : : : :

RESULT 10
LSHB     STANDARD;          PRF;    141 AA.
LSHB     AC
POL230;
DT       21-JUL-1986 (Rel. 01, Created)
DT       21-JUL-1986 (Rel. 01, Last sequence update)
DT       16-OCT-2001 (Rel. 40, Last annotation update)
DE       lutropin beta chain precursor [Luteinizing hormone beta subunit] (LSH-
beta) (LSH-B) (LH-B).
GN       LHB.
OS       Rattus norvegicus (Rat).
OC       Eukaryota; Metazoa; Chordata; Gracilata; Vertebrata; Euteleostomi;
OCC      Eumammalia; Euarchontes; Rodentia; Sciurognathi; Muridae; Rattus.
OX       NCBI_TaxId=10116.
[1]
SEQUENCE FROM N.A.
STRAIN=SPRAGUE-DAWLEY;
MEDLINE=81273573; PubMed=6192440;
Chin W.M., Godine J.E., Klein D.R., Chang A.S., Tan L.K.,
Habener J.F.;
"Nucleotide sequence of the cDNA encoding the precursor of the beta
subunit of rat luteotropin."
Proc. Natl. Acad. Sci. U.S.A. 80:4649-4653(1983).
[2]
SEQUENCE FROM N.A.
MEDLINE=85080043; PubMed=6096374;
Jameson L., Chin W.W., Hollenberg A.N., Chang A.S., Habener J.F.;
"The gene encoding the beta-subunit of rat luteinizing hormone.
Analysis of gene structure and evolution of nucleotide sequence. ";
J. Biol. Chem. 259:15474-15480(1984).
[3]
SEQUENCE OF 4-141 FROM N.A.
STRAIN=Mutar Imamichi; TISSUE=Anterior pituitary;
Kato Y., Ezashi T., Hirai T., Kato T.;
"Strain difference in nucleotide sequences of rat glycoprotein hormone
subunit cDNAs and gene fragment.";
Zool. Sci. 7:877-885(1990).
-1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
-1- SUBUNIT: HETERO DIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CHAIN WHICH CONFERES BIOLOGICAL SPECIFICITY TO THYROTOPIN.
-1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
FAMILY.
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EMBL; V01542; CAA24783.1;
ENBL; J00749; AAA96703.1;
ENBL; D00576; BAA00454.1;
PIR; A01498; UTRTB.
PIR; S42527; S42527.
HSSP; P01233; 1XUL.
InterPro: IPR000359; Cys_knot.
InterPro: IPR002400; GP_cysknot.
InterPro: IPR001545; Glyco_Hormone_beta.
Pfam: PF00007; Cys_knot; 1.

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DR PR1M5: PR00438; GFCYCKNOT.
DR SMART: SM00068; GHB.1.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
DR KW Hormone; Signal; Glycoprotein.
FT SIGNAL 1 20
FT CHAIN 21 141 LUTROPIN BETA CHAIN.
FT DSULFID 29 77 BY SIMILARITY.
FT DSULFID 43 92 BY SIMILARITY.
FT DSULFID 44 93 BY SIMILARITY.
FT DSULFID 54 108 BY SIMILARITY.
FT DSULFID 58 110 BY SIMILARITY.
FT DSULFID 113 120 BY SIMILARITY.
FT CARBOHYD 33 33 N-LINKED (GLCNAC. .) (PROBABLE).
SQ SEQUENCE 141 AA; 1517 MW; 50796F8832F83BF CRC64;

Query Match 56.1%; Score 436; DB 1; Length 141;
Best Local Similarity 65.5%; Ref. No. 1.de-33;
Matches 74; Conservative 16; Mismatches 23; Indels 0; Gaps 0;

QY 2 SKEPLAPRINATLAVEKQPCPTNTVNTICAGYCTPTIRVLGVLPALPQVNCVR 61
DQ 1 :|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
Db 21 SSGPLAPLCRVNMTAAENECFVCIFFTSICAGYCFSKVRVLPALPVPQVCTVR 80
DQ 1 :|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||
QY 62 DYVFESIRLQPCGVNPNVYVAVLSQCAALCRSTTDCGPKRHKPTCDP 114
DQ 1 :|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||
Db 81 ELURFASVRLQPCGVGVIVSPFVVALVSCRCPCGRLSSDCGPTPTHTCDLP 133
DQ 1 :|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||

RESULT 11
LSHB_CERSI STANDARD; PRT; 141 AA.
ID LSHB_CERSI
AC 077835; 019102;
DT 16-OCT-2001 (Ref. 40, Created)
DT 16-OCT-2001 (Ref. 40, Last sequence update)
DE LSHB_CERSI (Luteinizing hormone beta subunit)
DE Luteinizing hormone beta chain precursor (luteinizing hormone beta subunit) (LSH-
beta) (LSH-B) (LH-B).
GN LH1 and LH2
OS Ceratotherium simum (White rhinoceros) (Square-lipped rhinoceros).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Perissodactyla; Rhinocerotidae; Ceratotherium.
OC NCBI_TaxId=9807;
RN [1] JOURNAL FROM N.A.
RA MEDLINE=9839253; PubMed=9723860;
RA Lund L.A. Sherman G.B.;
RT "Duplication of the southern white rhinoceros (Ceratotherium simum
simum) luteinizing hormone beta subunit gene.";
RL J. Mol. Endocrinol. 21:19-30(1998).
RN [2]
RN SEQUENCE OF 7-141 FROM N.A.
RC TISSUE=Plutary; PubMed=9105757;
RA MEDLINE=9192989; PubMed=9192989;
RA Shelling C.B. and Lund L.A. Bunick D.;
RT "Characterization and phylogenetic significance of rhinoceros
luteinizing hormone beta (Lhb) subunit messenger RNA structure,
complementary DNA sequence and gene copy number.";
RL Gene 195:131-139(1997).
RC [-1] FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
CC [-1] SUBUNIT: HETEROID OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CHAIN.
CC LUTROPIN, LUTALIN, LUTALIN, LUTALIN, LUTALIN, LUTALIN, LUTALIN,
CC LUTROPIN, LUTALIN, LUTALIN, LUTALIN, LUTALIN, LUTALIN, LUTALIN,
CC [-1] SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
FAMILY.
CC
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```



Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
Actinopteri; Actinopteria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;  
Bovidae; Caprinae; Ovis.  
NCBI\_TaxID=9940,  
[1]  
SEQUENCE FROM N.A.  
MEDLINE=93351742; PubMed=8349025;  
Brown P., McNeilly J.R., Wallace R.M., McNeilly A.S., Clark A.J.;  
\*Characterization of the ovine LH beta-subunit gene; the promoter  
directs gonadotrope-specific expression in transgenic mice.\*;  
Mol. Cell. Endocrinol. 93:157-165(1993).  
RP  
SEQUENCE FROM N.A.  
TISSUE=Pituitary;  
MEDLINE=90245669; PubMed=2336396;  
D'Angelo-Bernard G., Moumni M., Jutisz M., Ward D.N.;  
\*Cloning and sequence analysis of the cDNA for the precursor of the  
beta subunit of ovine luteinizing hormone.\*;  
Nucleic Acids Res. 18:2175-2175(1990).  
RP  
SEQUENCE OF 21-139  
MEDLINE=72211145; PubMed=4556309;  
Liu W.-K., Nahm H.S., Sweeney C.M., Holcomb G.N., Ward D.N.;  
\*The primary structure of ovine luteinizing hormone. II. The amino  
acid sequence of the reduced, S-carboxymethylated A-subunit (LH-  
beta)\*;  
J. Biol. Chem. 247:4365-4381(1972).  
RP  
SEQUENCE OF 21-139  
MEDLINE=73190035; PubMed=4575435;  
Sairam M.R., Samy T.S.A., Pepkoff R., Li C.H.;  
\*The primary structure of ovine interstitial cell-stimulating  
hormone. II. The beta-subunit.\*;  
Arch. Biochem. Biophys. 153:572-586(1972).  
[5]  
PRELIMINARY ASSIGNMENT OF DISULFIDE BONDS.  
MEDLINE=7608152; PubMed=120191;  
Chen Y.-C., Wu K.-W.  
\*The primary structure of ovine interstitial cell stimulating  
hormone. IV: Disulfide bridges of the beta subunit.\*;  
Int. J. Pept. Protein Res. 7:487-493(1975).  
[6]  
STRUCTURE OF CARBOHYDRATE.  
MEDLINE=91006170; PubMed=2209620;  
Weishaar G., Hiyaena J.J., Renwick A.G.C.;  
\*Site-specific N-glycosylation of ovine lutropin. Structural analysis  
by ion-exchange chromatography and mass spectrometry.\*;  
Biochemistry 32:7411-751(1990).  
CC  
FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING  
THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.  
CC  
SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA  
CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,  
LUTROPIN, FOLLITROPIN AND GONADOTROPIN.  
CC  
SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN  
FAMILY.  
CC  
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or send an email to licenselib@sib-sib.ch).

PUBL: 584695; ADM28749.1; --  
EML: A35486; CAN36729.1; --  
PDB: 1G5QZ2; SOMR23.  
PIR: S02232; SOMR23.  
HSP: P01233; LXUL  
GlycoSuiteDB: P01231; --  
InterPro: IPR000359; Cys\_knot.  
InterPro: IPR002400; GF\_Cysknot.  
InterPro: IPR001545; Glyco\_hormone\_beta.

DR	Pfam: PF00007; Cys_knot; 1.
DR	SALTS; SH068; GECTSKNOT.
DR	SH068; SH068; GECTSKNOT.
DR	PROSITE: PS00261; GLYC_HORMONE_BETA_1; 1.
DR	PROSITE: PS00689; GLYC_HORMONE_BETA_2; 1.
KW	Hormone; signal; Glycoprotein.
FT	SIGNAL 1 20
FT	CHAIN 21 141
FT	LUTROPIN BETA CHAIN.
FT	BY SIMILARITY.
FT	DISEULFID 29 77
FT	DISEULFID 43 92
FT	DISEULFID 46 130
FT	DISEULFID 58 110
FT	DISEULFID 58 110
FT	DISEULFID 113 120
FT	MOD_RES 21 21
FT	MOD_RES 33 33
FT	CARBOHYD 33 33
FT	VARIANT 138 141
FT	CONFLICT 30 30
FT	CONFLICT 30 30
FT	CONFLICT 63 63
FT	CONFLICT 63 63
FT	CONFLICT 71 72
FT	CONFLICT 81 81
FT	CONFLICT 122 123
FT	CONFLICT 126 126
FT	CONFLICT 126 126
FT	SEQUENCE 141 AA: 15184 MM; CS9EC7CMA35A9DC CRC64;
SQ	SEQUENCE 141 AA: 15184 MM; CS9EC7CMA35A9DC CRC64;
Query Match	
Best Local Similarity : 64.1%; Pred No. 8e-33;	
Matches 75; Conservative 14; Mismatches 28; Indels 0; Gaps 0;	
Oy	2 SKEPLRCPRIINATLAVKGGCFVITVTTCAGYCTPTVRGVLGPALPQVCNVR 61
Db	1 L I I I I L P C P O R I N A T L A E K E A C F V C I F T T S I C A G Y C L S M K R L P V L P P Q R V C T H 80
Oy	62 DVFPSIHLPGCGPNVPVSAYVALSQCALCRSTTDCGGPKHPIFCDDPRPD 118
Db	1 L I I I I L P C P O R I N A T L A E K E A C F V C I F T T S I C A G Y C L S M K R L P V L P P Q R V C T H 137
81	EHRASVTLPGCFPGDPHWSEPVLSHCSCGRSLSDCGRPFOPLACDHPPLPD 137
RESULT 14	
ID	LSHB_MOUSE STANDARD: PRT; 141 AA.
AC	009108; G06844:
DT	01-NOV-1997 (Rel. 35, Created)
DE	16-NOV-2001 (Rel. 40, Last sequence update)
DE	*Cloning of the mouse gonadotropin beta-subunit encoding genes, II.
DE	Lutropin-beta chain precursor (lutealizing hormone beta subunit) (LSH-
GN	beta) (LSH-B) (JH-B).
OS	Mus musculus (Mouse).
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC	Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Mus;
OX	NCBI_Taxid=10090;
ON	(1)
OR	SEQUENCE FROM N.A.
RX	STRAIN=L29/SV;
RX	MDLINE=96125216; Pubmed=8543188;
RA	Kumar T.R., Matzuk M.K.;
RT	"Cloning of the mouse gonadotropin beta-subunit-encoding genes, II."
RL	Structure of the luteinizing hormone beta-subunit-encoding genes".;
RL	Gene 166:335-346(1995).
[2]	
RP	SEQUENCE OF 18-122 FROM N.A.
RC	STRAIN=C57BL/6 x CBA; TISSUE=Anterior pituitary;
RC	Brown J.D., Khanolkar D., Kahn C.R., Kahn D.L.;
CC	From: J. Biol. Chem. 266:11111-11115, 1991.
CC	-1'- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
CC	THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.
CC	-1' SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CC	CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTRPIN,
CC	LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
CC	-1' SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN



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 CC or send an email to [license@isb-sib.ch](mailto:license@isb-sib.ch)).

DR EMBL: AF106915; AAF15966.1; .  
 DR HSP: P01233; IXUL.  
 DR InterPro: IPR000359; Cys\_knot.  
 DR InterPro: IPR002400; GF\_cys\_knot.  
 DR Pfam: PF00007; Cys\_knot\_1.  
 DR SMART: SM00048; GHS; GHS\_KNOT.  
 DR PROSITE: PS00261; GLYCO\_HORMONE\_BETA\_1; 1.  
 DR PROSITE: PS00689; GLYCO\_HORMONE\_BETA\_2; PARTIAL.  
 KW Hormone; Signal; Glycoprotein.  
 FT SIGNAL 1 20 BY SIMILARITY.  
 FT DISULFID 21 >128 LUTROPIN BETA CHAIN.  
 FT DISULFID 29 77 BY SIMILARITY.  
 FT DISULFID 43 92 BY SIMILARITY.  
 FT DISULFID 54 106 BY SIMILARITY.  
 FT DISULFID 58 110 BY SIMILARITY.  
 FT DISULFID 113 120 BY SIMILARITY.  
 FT CARBOHYD 33 33 N-LINKED (GLCNAC... ) (POTENTIAL).  
 FT NON\_TER 128 128  
 SQ SEQUENCE 128 AA: 13660 MW: 8808625 CRC64:  
 Query Match 52.6%; Score 409; DB 1; Length 128;  
 Best Local Similarity 63.9%; Pred. No. 5e-31;  
 Matches 69; Conservative 16; Mismatches 23; Indels 0; Gaps 0;

OY 2 SKEPLRCPNPATLAVKGGPCVITVTTCGCGTNTVLOGVLPALPQVYKVR 61  
 DB 21 SRGLPLCRPNATLAEKACVITFTSICAGYCFSAVRVLPALPVPQVCTH 80  
 OY 62 DYRESIRLPCGPGVNPVSVAVSLSCALCRSTDCGKPDHPL 109  
 DB 81 ELRFASVRLPCGPGVNPVSVAVSLSCALCRSTDCGKPDHPL 128

RESULT 17  
 LSHB\_BALAC STANDARD; PRT: 119 AA.  
 AC P31088; 1993 (Rel. 27, Created)  
 DT 01-OCT-1993 (Rel. 27, Last sequence update)  
 DT 16-OCT-2001 (Rel. 40, Last annotation update)  
 DE Lutropin beta chain (Luteinizing hormone beta subunit) (LSH-beta)  
 DE (LSH-B) (LH-B).  
 GN LHB.  
 OS Balanoptera acutorostrata (Mink whale) (lesser rorqual).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Cetartiodactyla; Cetacea; Mysticeti;  
 OC Balanopteridae; Balanoptera.  
 OX NCBI\_TaxID=9767;  
 RN [1]  
 RP SEQUENCE  
 RA Karasov V.S., Pankov Y.A.;  
 RT "Amino acid sequence of reduced and carboxymethylated alpha- and beta-  
 RT subunits of the little picked whale luteinizing hormone.";  
 RL Biochimica 50:1972-1986(1985).  
 CC -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING  
 CC THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.  
 CC -1- SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA  
 CC CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,  
 CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.  
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN  
 CC FAMILY.  
 CC PIR: P01233; IXUL.  
 DR HSP: P01233; IXUL.

DR InterPro: IPR000359; Cys\_knot.  
 DR InterPro: IPR002400; GF\_cys\_knot.  
 DR Pfam: PF00007; Cys\_knot\_1.  
 DR SMART: SM00048; GHS; GHS\_KNOT.  
 DR PROSITE: PS00261; GLYCO\_HORMONE\_BETA\_1; 1.  
 DR PROSITE: PS00689; GLYCO\_HORMONE\_BETA\_2; FALSE\_NEG.  
 KW Hormone; Glycoprotein.  
 FT DISULFID 9 57 BY SIMILARITY.  
 FT DISULFID 23 72 BY SIMILARITY.  
 FT DISULFID 26 110 BY SIMILARITY.  
 FT DISULFID 34 88 BY SIMILARITY.  
 FT DISULFID 38 90 BY SIMILARITY.  
 FT DISULFID 98 100 BY SIMILARITY.  
 FT CARBOHYD 13 13 N-LINKED (GLCNAC... ).  
 SQ SEQUENCE 118 AA: 12414 MW: 83922925 CRC64:  
 Query Match 52.4%; Score 407; DB 1; Length 118;  
 Best Local Similarity 56.0%; Pred. No. 7e-31;  
 Matches 70; Conservative 16; Mismatches 27; Indels 10; Gaps 1;  
 OY 5 PLRPPCRPNATLAVKGGPCVITVTTCGCGTNTVLOGVLPALPQVYKVR 64  
 DB 4 PLRPLCRPNATLAEKACVITFTSICAGYCFSAVRVLPALPVPQVCTH 63  
 OY 65 FESIRLPCGPGVNPVSVAVSLSCALCRSTDCGKPDHPL 124  
 DB 64 FASIRLPCGPGVNPVSVAVSLSCALCRSTDCGKPDHPL 113  
 OY 125 PPSEL 129  
 DB 114 PRGL 118  
 RESULT 18  
 LSHB\_PHYCA STANDARD; PRT: 118 AA.  
 AC P25330;  
 DT 01-MAY-1992 (Rel. 22, Created)  
 DT 01-MAY-1992 (Rel. 22, Last sequence update)  
 DT 16-OCT-2001 (Rel. 40, Last annotation update)  
 DE Lutropin beta chain (Luteinizing hormone beta subunit) (LSH-beta)  
 DE (LSH-B) (LH-B).  
 GN LHB.  
 OS Physeter catodon (Sperm whale) (Physeter macrocephalus).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Cetartiodactyla; Cetacea; Odontoceti;  
 OC Physetridae; Physeter.  
 OX NCBI\_TaxID=9755;  
 RN [1]  
 RP SEQUENCE  
 RA MEDLINE=87032654; PubMed=6466737;  
 RA Pankov Y.A., Karasov V.S.;  
 RT "Primary structure of sperm whale luteinizing hormone.";  
 RL Int. J. Pept. Protein Res. 28:124-129(1986).  
 RN [2]  
 RP SEQUENCE  
 RA MEDLINE=87032654; PubMed=6466737;  
 RA Pankov Y.A., Karasov V.S.;  
 RT "Luteinizing hormone of the sperm whale. Amino acid sequences of  
 RT reduced and carboxymethylated beta-subunits.";  
 RL Biochimica 49:1004-1018(1984).  
 CC -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING  
 CC THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.  
 CC -1- SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA  
 CC CHAIN WHICH CONFERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,  
 CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.  
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN  
 CC FAMILY.  
 CC PIR: P01233; IXUL.  
 DR HSP: P01233; IXUL.  
 DR InterPro: IPR000359; Cys\_knot.

DR InterPro: IPR002400; GF\_cysknot.  
 DR InterPro: IPR001545; Glyco\_hormone\_beta.  
 DR Pfam: PF00007; GFCYSKNOT.  
 DR SMART: SM00068; GHB; 1.  
 DR PROSITE: PS00689; GLYCO\_HORMONE\_BETA\_1; 1.  
 DR PROSITE: PS00689; GLYCO\_HORMONE\_BETA\_2; 1.  
 KW Hormone; Glycoprotein.  
 FT DISULFID 9 57 BY SIMILARITY.  
 FT DISULFID 23 72 BY SIMILARITY.  
 FT DISULFID 26 110 BY SIMILARITY.  
 FT DISULFID 34 88 BY SIMILARITY.  
 FT DISULFID 38 90 BY SIMILARITY.  
 FT DISULFID 93 100 BY SIMILARITY.  
 FT CARBOHYD 13 13 N-LINKED (GLCNAC...)  
 SQ SEQUENCE 118 AA: 12412 MW: 81177 AS6382F15E7 CRC64;  
 Query Match 52.3%; Score 406; DB 1; Length 118;  
 Best Local Similarity 57.6%; Pred No. 8.6e-31;  
 Matches 72; Conservative 15; Mismatches 28; Indels 10; Gaps 1;

QY 5 PLRPRCPINATLAVEKEGCPVCTVNTTCAGTCPTMTVYLVGLVLPALPQVNCYRDR 64  
 DB 4 PLRPLCPINATLAQACACPVCTFTTTCAGTCPSNVRLPALPVPVCTYRDLR 63  
 QY 65 FESIRLPCPCGVNPNVYAVALSQCALCRSTTDCGPKHPLTCDPRFODSSSKA 124  
 DB 64 FASIRLPCPCGVNPNVYAVALSQCALCRSTTDCGPKHPLTCDPRFODSSSKA 113  
 QY 125 PPESL 129  
 DB 114 PRGL 118  
 RESULT 19  
 LSHB\_MACRU STANDARD; PRT; 138 AA.  
 AC 04643;  
 DT 30-MAY-2000 (Rel. 39, Created)  
 DT 30-MAY-2000 (Rel. 39, Last sequence update)  
 DT 16-OCT-2001 (Rel. 40, Last annotation update)  
 DE Lutropin beta chain precursor (Luteinizing hormone beta subunit) (LSH-beta) (LSH-B) (LH-B) (Fragment).  
 GN LHB.  
 OS Macropus rufus (Red kangaroo) (Marsupialia rufa).  
 CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 CC Mammalia; Metatheria; Diprotodontia; Macropodidae; Macropus.  
 OC NCBI\_TaxID=9321;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=pituitary;  
 RX MEDLINE=98345424; PubMed=9680384;  
 RA Harrison G.A., Deane E.M., Cooper D.W.;  
 RT "cDNA cloning of luteinizing hormone subunits from brushtail possum and red kangaroo.";  
 RL Mamm. Genome 9:638-642(1998).  
 CC -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.  
 CC -1- SUBUNIT: MEMBER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA CHAIN WITH SPECIFICITY TO THYROTROPIN, LUTROPIN, FOLLITROPIN AND GONADOTROPIN.  
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN FAMILY.  
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 CC EMBL; AF017450; AAC96021.1;

DR HSP: P01233; IXUL.  
 DR InterPro: IPR000359; Cys\_knot.  
 DR InterPro: IPR001545; Glyco\_hormone\_beta.  
 DR Pfam: PF00007; Cys\_knot; 1.  
 DR SMART: SM00068; GHB; 1.  
 DR PROSITE: PS00689; GLYCO\_HORMONE\_BETA\_1; 1.  
 DR PROSITE: PS00689; GLYCO\_HORMONE\_BETA\_2; 1.  
 KW Hormone; Glycoprotein.  
 FT NON\_TER <1 19 POTENTIAL.  
 FT CHAIN 20 138 LUTROPIN BETA CHAIN.  
 FT DISULFID 27 75 BY SIMILARITY.  
 FT DISULFID 41 90 BY SIMILARITY.  
 FT DISULFID 44 128 BY SIMILARITY.  
 FT DISULFID 52 106 BY SIMILARITY.  
 FT DISULFID 56 108 BY SIMILARITY.  
 FT DISULFID 111 118 BY SIMILARITY.  
 FT CARBOHYD 31 31 N-LINKED (GLCNAC...)  
 SQ SEQUENCE 138 AA: 14698 MW: 24602198508F7B CRC64;  
 Query Match 51.7%; Score 402; DB 1; Length 138;  
 Best Local Similarity 62.7%; Pred. No. 2.3e-30;  
 Matches 69; Conservative 11; Mismatches 30; Indels 0; Gaps 0;

QY 5 PLRPRCPINATLAVEKEGCPVCTVNTTCAGTCPTMTVYLVGLVLPALPQVNCYRDR 64  
 DB 22 PLRPLCPINATLAQACACPVCTFTTTCAGTCPSNVRLPALPVPVCTYRDLR 81  
 QY 65 FESIRLPCPCGVNPNVYAVALSQCALCRSTTDCGPKHPLTCDPR 114  
 DB 82 FESIRLPCPCGVNPNVYAVALSQCALCRSTTDCGPKHPLTCDPR 131  
 RESULT 20  
 LSHB\_TRIVU STANDARD; PRT; 141 AA.  
 AC 04648; 2001 (Rel. 40, Created)  
 DT 16-OCT-2001 (Rel. 40, Last sequence update)  
 DT 16-OCT-2001 (Rel. 40, Last annotation update)  
 DE Lutropin beta chain precursor (Luteinizing hormone beta subunit) (LSH-beta) (LSH-B) (LH-B).  
 GN LHB.  
 OS Trichosurus vulpecula (Brush-tailed possum).  
 CC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 CC Mammalia; Metatheria; Diprotodontia; Phalangeridae; Trichosurus.  
 OC NCBI\_TaxID=9337;  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=pituitary;  
 RX MEDLINE=98345424; PubMed=9680384;  
 RA Harrison G.A., Deane E.M., Cooper D.W.;  
 RT "cDNA cloning of luteinizing hormone subunits from brushtail possum and red kangaroo.";  
 RL Mamm. Genome 9:638-642(1998).  
 CC -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.  
 CC -1- SUBUNIT: MEMBER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA CHAIN WITH SPECIFICITY TO THYROTROPIN, LUTROPIN, FOLLITROPIN AND GONADOTROPIN.  
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN FAMILY.  
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 CC EMBL; AF017450; AAC96021.1;

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CC EMBL; AF017448; AAC96019.1; -.
CC EMBL; AF090389; AAC63526.1; -.
CC EMBL; AF013152; AAC63526.1; -.
CC InterPro: IPR000359; Cys.knot.
CC Pfam: PF00007; Cys.knot.1.
CC SMART; SM00068; GHB; 1.
CC PROSITE; PS00261; GLYCO_HORMONE_BETA_1; 1.
CC PROSITE; PS00689; GLYCO_HORMONE_BETA_2; 1.
CC Hormone; Signal; Glycoprotein.
CC SIGNAL 1 22
CC CHAIN 23 141 LUTROPIN BETA CHAIN.
CC FT DISULFID 30 78 BY SIMILARITY.
CC FT DISULFID 44 93 BY SIMILARITY.
CC FT DISULFID 47 131 BY SIMILARITY.
CC FT DISULFID 55 109 BY SIMILARITY.
CC FT DISULFID 59 111 BY SIMILARITY.
CC FT DISULFID 114 121 BY SIMILARITY.
CC FT CARBOHYD 34 34 N-LINKED (GLCNAC... ) (POTENTIAL).
CC SQ SEQUENCE 141 AA; 15060 MW; C6CF980363C4E0 CRC64;

Query Match 50.68; Score 393; DB 1; Length 141;
Best Local Similarity 62.48; Pred. No. 1.6e-29;
Matches 68; Conservative 11; Mismatches 30; Indels 0; Gaps 0;

QY 6 LPRCPINATLAVEKEGCPVCTVTTTCAGCTPTMTVLQGLVLPALPQVYVYRDVRF 65
DB 26 LRLCPINATLAEADPCVCTVTTTCAGCTPTMTVLQGLVLPALPQVYVYRDVRF 85
QY 66 ESIRLPCPGVNVVSVYVALSCQALCRSTTDCGPKDHPLTCDP 114
DB 86 SSIRLPCPGVNVVSVYVALSCQALCRSTTDCGPKDHPLTCDP 134

RESULT 21
GTH2_CARAU STANDARD; PRT; 140 AA.
AC Q98849;
DT 16-OCT-2001 (Rel. 40, Created)
DT 16-OCT-2001 (Rel. 40, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta) (Luteinizing hormone-like GTH).
OS Carassius auratus (Goldfish).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Cypriniformes; Cyprinidae; Carassius.
NCBI_Taxid=7957;
RN SEQUENCE FROM N.A.
RC TISSUE=Pituitary;
RX MEDLINE=97242868; PubMed=9073500;
RA Yoshura Y., Kobayashi M., Kato Y.A., Aida K.;
RT "Molecular cloning of the cDNAs encoding two gonadotropin beta subunits (GTH-I beta and -II beta) from the goldfish, Carassius auratus.";
RT Gen. Comp. Endocrinol. 105:379-389(1997).
RL [2]
RN SEQUENCE FROM N.A.
RC Kim S.C., Yoshura Y., Suetake H., Kobayashi M., Aida K.;
RT "Molecular cloning of gonadotropin II beta subunit gene in goldfish.";
RC Fisheries Sci. 65:800-801(1999).
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN FAMILY.
CC
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CC or send an email to license@isb-sib.ch).
CC EMBL; D88024; S811351.1; -.
CC EMBL; A8035596; S811351.1; -.
CC RSP; P01233; IXL;
CC InterPro: IPR000359; Cys.knot.
CC InterPro: IPR002400; GE_Cysknot.
CC Pfam: PF00007; Cys.knot.1.
CC PRINTS; PR00438; GFCYSKNOT.
CC SMART; SM00068; GHB; 1.
CC PROSITE; PS00261; GLYCO_HORMONE_BETA_1; 1.
CC PROSITE; PS00689; GLYCO_HORMONE_BETA_2; 1.
CC Hormone; Signal; Glycoprotein.
CC SIGNAL 24 140 GONADOTROPIN BETA-II CHAIN.
CC FT DISULFID 29 77 BY SIMILARITY.
CC FT DISULFID 43 92 BY SIMILARITY.
CC FT DISULFID 46 130 BY SIMILARITY.
CC FT DISULFID 54 108 BY SIMILARITY.
CC FT DISULFID 58 110 BY SIMILARITY.
CC FT DISULFID 113 120 BY SIMILARITY.
CC FT CARBOHYD 33 33 N-LINKED (GLCNAC... ) (POTENTIAL).
CC SQ SEQUENCE 140 AA; 15533 MW; IBE66352979ADFA CRC64;

Query Match 39.08; Score 303; DB 1; Length 140;
Best Local Similarity 54.38; Pred. No. 2.8e-21;
Matches 51; Conservative 16; Mismatches 27; Indels 0; Gaps 0;

QY 8 PRCPINATLAVEKEGCPVCTVTTTCAGCTPTMTVLQGLVLPALPQVYVYRDVRFES 67
DB 27 PCEPVPNTVAVEKEGCPVCTVTTTCAGCTPTMTVLQGLVLPALPQVYVYRDVRFET 86
QY 68 IRLPCPGVNVVSVYVALSCQALCRSTTDC 101
DB 87 VLRLPCPGVNVVSVYVALSCQALCRSTTDC 120

RESULT 22
GTH2_CYPCA STANDARD; PRT; 144 AA.
AC P01235;
DT 21-JUL-1986 (Rel. 01, Created)
DT 01-MAY-1992 (Rel. 22, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta) (Luteinizing hormone-like GTH) (Common carp).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Cypriniformes; Cyprinidae; Cyprinus.
NCBI_Taxid=7962;
RN SEQUENCE FROM N.A.
RC MEDLINE=89233593; PubMed=3246480;
RA Chang Y.S., Huang C.-J., Huang F.-L., Lo T.-B.;
RT "Primary structures of carp gonadotropin subunits deduced from cDNA nucleotide sequences.";
RT Int. J. Pept. Protein Res. 32:556-564(1988).
RL [1]
RN SEQUENCE FROM N.A.
RC Chang Y.S., Huang F.-L., Lo T.-B.;
RT Submitted (MAY-1991) to the EMBL/GenBank/DBJ databases.
(3)
RN SEQUENCE OF 28-53 AND 141-142.
RX MEDLINE=78124308; PubMed=607993;
RA Jolles J., Burzawa-Gerard E., Fontaine Y.-A., Jolles P.;
RT "The evolution of gonadotropins: some molecular data concerning a non-mammalian pituitary gonadotropin, the hormone from a teleost fish (Cyprinus carpio L.).";
RT

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RL Blochlmte 59:893-898(1977).
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC FAMILY.
CC -----
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CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
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CC use by non-profit institutions as long as its content is in no way
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CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL: X59888; CAA42542.1;
DR EMBL: X59889; CAA42543.1;
DR PIR: S29677; S29677.
DR PIR: S29678; S29678.
DR PIR: A01504; UTCAB.
DR PIR: J0462; J0462.
DR HSP: P01233; IXUL.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR002400; GP_cysknot.
DR Pfam: PF00007; Glyco_hormone_beta.
DR PRINTS: PR00438; GPCYSKNOT.
DR SMART: SM00068; GH8; 1.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
KW Hormone; Glycoprotein; Signal.
FT SIGNAL 1 27
FT CHAIN 28 142 GONADOTROPIN BETA-II CHAIN.
FT PROPEP 143 144
FT DISULFID 33 81 BY SIMILARITY.
FT DISULFID 47 96 BY SIMILARITY.
FT DISULFID 58 112 BY SIMILARITY.
FT DISULFID 62 114 BY SIMILARITY.
FT DISULFID 117 124 BY SIMILARITY.
FT CARBOHYD 37 37 N-LINKED (GLCNAC... ) (PROBABLE).
SQ SEQUENCE 144 AA; 16039 MW; 854FE80D4A39DCFB CRC64;

Query Match 39.0%; Score 303; DB 1; Length 144;
Best Local Similarity 54.3%; Pred. No. 2.9e-21;
Matches 51; Conservative 16; Mismatches 27; Indels 0; Gaps 0;

QY 8 PCRPINATLAVKESGCPVCTVTTTCAGTCPTMTVVLQGVLPALQVYCNVYDVRFS 67
DB 31 PCPEPVTAVKESGCPVCTVTTTCAGTCPTMTVVLQGVLPALQVYCNVYDVRFS 90
QY 68 IRLPCGPGVNPVSYAVALSOCALCRSTTDC 101
DB 91 VRLPDCPGVDPHTVTPVLSLDCSLCTMDTSDC 124

RESULT 23
GTH2_HYPMO STANDARD; PRT; 141 AA.
AC P37038; 1994 (Rel. 29, Created)
DT JUN-1994 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta) (Luteinizing
DE hormone-like GTH).
OS Hypophthalmichthys molitrix (Silver carp).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Cypriniformes; Cyprinidae; Hypophthalmichthys.
OX NCBI_TaxID=13095;
RN [1]
RP SEQUENCE FROM N.A. AND PARTIAL SEQUENCE.
RC TISSUE-Pituitary.
RA Chang F.-L., Huang F.-L., Lo T.-B.;
RA FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
RA SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
RA -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
RA FAMILY.
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RA Chang Y.S., Huang C.J., Huang F.-L., Liu C.S., Lo T.-B.;
RT *Purification, characterization, and molecular cloning of
RT gonadotropin subunits of silver carp (Hypophthalmichthys molitrix)*;
RL Gen. Comp. Endocrinol. 78:23-33(1990).
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC FAMILY.
CC -----
DR PIR: B60626; B60626.
DR HSP: P01233; IXUL.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR002400; GP_cysknot.
DR Pfam: PF00007; Glyco_hormone_beta.
DR PRINTS: PR00007; Cys_knot; 1.
DR SMART: SM00068; GPCYSKNOT.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
KW Hormone; Glycoprotein; Signal.
FT SIGNAL 1 24
FT CHAIN 25 139 GONADOTROPIN BETA-II CHAIN.
FT PROPEP 140 141
FT DISULFID 30 78 BY SIMILARITY.
FT DISULFID 44 93 BY SIMILARITY.
FT DISULFID 57 131 BY SIMILARITY.
FT DISULFID 59 113 BY SIMILARITY.
FT DISULFID 114 121 BY SIMILARITY.
FT CARBOHYD 34 34 N-LINKED (GLCNAC... ) (POTENTIAL).
SQ SEQUENCE 141 AA; 15856 MW; A42C48FE983EEA6 CRC64;

Query Match 38.7%; Score 301; DB 1; Length 141;
Best Local Similarity 54.3%; Pred. No. 4.4e-21;
Matches 51; Conservative 15; Mismatches 28; Indels 0; Gaps 0;

QY 8 PCRPINATLAVKESGCPVCTVTTTCAGTCPTMTVVLQGVLPALQVYCNVYDVRFS 67
DB 28 PCPEPVTAVKESGCPVCTVTTTCAGTCPTMTVVLQGVLPALQVYCNVYDVRFS 87
QY 68 IRLPCGPGVNPVSYAVALSOCALCRSTTDC 101
DB 88 VRLPDCPGVDPHTVTPVLSLDCSLCTMDTSDC 121

RESULT 24
GTH2_CTEID STANDARD; PRT; 146 AA.
AC P30984; 1993 (Rel. 26, Created)
DT JUL-1993 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta) (Luteinizing
DE hormone-like GTH) (Fragment).
OS Ctenopharyngodon idella (Grass carp).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Cypriniformes; Cyprinidae; Ctenopharyngodon.
OX NCBI_TaxID=7959;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE-Pituitary; F.-L., Lo T.-B.;
RA Chang F.-L., Huang F.-L., Lo T.-B.;
RA FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
RA SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
RA -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
RA FAMILY.
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[illegible]

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OM protein - protein search, using sw model

Run on: October 11, 2002, 11:26:58 ; Search time 70 Seconds  
(without alignments)  
348,461 Million cell updates/sec

Title: US-09-813-398-3

Perfect score: 17758419639121456  
Sequence: 1 PSKEPLARPCRPINATLAVE.....SKAPPSLPSPRLPGPSDT 141

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 50 summaries

- Database :
- 1: SPTREMBL19.\*
  - 2: sp\_archaea.\*
  - 3: sp\_bacteria.\*
  - 4: sp\_fungi.\*
  - 5: sp\_human.\*
  - 6: sp\_invertebrate.\*
  - 7: sp\_mammal.\*
  - 8: sp\_mollusca.\*
  - 9: sp\_plant.\*
  - 10: sp\_plant.\*
  - 11: sp\_rodent.\*
  - 12: sp\_virus.\*
  - 13: sp\_vertebrate.\*
  - 14: sp\_unclassified.\*
  - 15: sp\_rvirus.\*
  - 16: sp\_bacteriap.\*
  - 17: sp\_archaeap.\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the best of the results being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	631	81.2	165	6 Q9BEH1	Q9beh1 macaca fasc
2	626	80.6	165	6 Q9BEH2	Q9beh2 macaca fasc
3	616	79.3	165	6 Q9BEH3	Q9beh3 macaca fasc
4	616	79.3	165	6 Q9BEH4	Q9beh4 macaca fasc
5	448	57.7	142	6 Q9BEH5	Q9beh5 mus muscu
6	435	56.0	139	11 Q62778	Q62778 rattus norv
7	400	51.5	127	11 Q92446	Q92446 cavia porce
8	400	51.5	135	11 Q92447	Q92447 cavia porce
9	400	51.5	141	11 Q92448	Q92448 cavia porce
10	381	49.0	141	6 Q95J85	Q95j85 monodelphis
11	301	38.7	140	13 Q98T73	Q98t73 mylopharyng
12	295	38.0	131	13 Q90W63	Q90w63 scyllorhinu
13	295	38.0	142	13 Q90G92	Q90g92 oncorhynch
14	293	37.7	89	6 Q46619	Q46619 equus hemo
15	290	37.3	140	13 Q9DG80	Q9dg80 ictalurus p
16	288	37.1	89	6 Q46618	Q46618 equus zebra

17	281	36.2	137	13 Q91999	Q91999 acipenser b
18	259	33.3	137	13 Q90MC1	Q90mc1 xenopus lae
19	239	33.2	131	13 Q90M64	Q90m64 scyllorhinu
20	238	33.1	131	13 Q90M65	Q90m65 scyllorhinu
21	257	33.1	146	13 Q9DEH0	Q9deh0 pagrus majo
22	256	32.9	82	6 Q46622	Q46622 ceratotheri
23	255.5	32.9	80	11 Q63013	Q63013 rattus norv
24	253.5	32.6	145	13 Q90W55	Q90w55 paralichth
25	251	32.3	132	13 Q9DG81	Q9dg81 ictalurus p
26	248.5	32.0	146	13 Q90M19	Q90m19 hippoglossu
27	247.5	31.9	143	13 Q91996	Q91996 acipenser b
28	244	31.4	128	13 Q91997	Q91997 acipenser b
29	241.5	31.1	145	13 Q90M02	Q90m02 paralichth
30	240	30.9	138	6 Q95J88	Q95j88 monodelphis
31	239	30.8	109	13 Q91998	Q91998 acipenser b
32	239	30.8	123	13 Q90ZK1	Q90zk1 rana ridibu
33	229	29.5	130	13 Q9Y1B3	Q9y1b3 carassius a
34	229	29.5	130	13 Q9W6Q7	Q9w6q7 salmo salar
35	225	28.8	130	13 Q98T72	Q98t72 mylopharyng
36	224	28.8	125	13 Q91992	Q91992 conger cong
37	207	26.6	129	6 Q95J82	Q95j82 monodelphis
38	201	25.9	149	13 Q9PW99	Q9pw99 carassius a
39	200.5	25.8	149	13 Q9PW99	Q9pw99 carassius a
40	200.5	25.8	150	13 Q9PW99	Q9pw99 carassius a
41	200.5	25.8	150	13 Q9PW99	Q9pw99 carassius a
42	200.5	25.8	150	13 Q9PW99	Q9pw99 carassius a
43	199	25.6	147	13 Q91052	Q91052 cephaloparyn
44	199	25.6	150	13 Q9PW21	Q9pw21 aristichthy
45	186.5	24.0	137	13 Q9DG93	Q9dg93 oncorhynch
46	174	22.4	61	11 Q63012	Q63012 rattus norv
47	172.5	22.2	123	13 Q9W6Q8	Q9w6q8 salmo salar
48	163	21.0	87	4 Q15962	Q15962 homo sapien
49	145	18.7	120	13 Q91120	Q91120 morone saxa
50	144	18.5	120	13 Q90VV0	Q90vv0 paralichth

ALIGNMENTS

RESULT 1

Q9BEH1 ID Q9BEH1 PRELIMINARY: PRT: 165 AA.

AC Q9BEH1 01-JUN-2001 (TRENBLrel. 17, Created)

DT 01-JUN-2001 (TRENBLrel. 17, Last sequence update)

DT 01-DEC-2001 (TRENBLrel. 19, Last annotation update)

DE CHORIONIC GONADOTROPIN BETA SUBUNIT 2.

DS Macaca fascicularis (Crad eating macaque) (Cynomolgus monkey)

OS Macaca fascicularis (Crad eating macaque) (Cynomolgus monkey)

OC Mammalia; Eutheria; Primates; Catarrhini; Cercopitheidae; Cercopitheinae; Macaca.

OX NCBI\_TaxID=9541;

RN [1]

RP SEQUENCE FROM N.A.

RC TISSUE=EMBRYONIC TROPHOBLAST;

RA Wilken J.A., Matsumoto K., Lasley B.L., Bedows E.;

RT "A Comparison of Chorionic Gonadotropin Expression by Human and Macaque Trophoblast Cells";

HL Submitted (JAN-2001) to the EMBL/GenBank/DBJ databases.

DR EMBL: AY025360; AK08644.1;

DR EMBL: AY025360; AK08644.1;

DR InterPro: IPR001545; Glyco\_hormone\_beta.

DR Pfam: PF00007; Cys knot; 1.

DR SMART: SM00068; GHB; 1.

DR PROSITE: PS002161; GLYCO\_HORMONE\_BETA\_1; UNKNOWN\_1.

DR PROSITE: PS00689; GLYCO\_HORMONE\_BETA\_2; 1.

SQ SEQUENCE 165 AA; 17743 MW; 2F21566B48592471 CRC64;

Query Match 81.2%; Score 631; DB 6; Length 165;

Best Local Similarity 82.7%; Pred. No. 2.4e-62;

Matches 115; Conservative 7; Mismatches 17; Indels 0; Gaps 0;

OX	NCBL_TaxID=9544, 9986;
RN	(1)
RP	SEQUENCE FROM N.A.
RC	STRINGS-141; Wang B.;
RF	Chen Y., Peng Y.P.
RT	*Identification of beta subunit of the rhesus monkey chorionic
RL	gonadotropin (rMG)*;
RT	Submitted (NOV-2000) to the ENBL/GenBank/DBJ databases.

RT The immune responses and anti-fertility effect in rabbits induced by  
RT beta-subunit of rhesus monkey chorionic gonadotropin (rmCGb) using DNA  
RT immunization.\*;  
RT Submitted (MAR-2001) to the EMBL/GenBank/DBJ databases.  
RL

DR	EMBL; AF362079; AAKS2504.1; *.
DR	HSP; P01233; 1XUL.
DR	Intercept; IPK001359; Glys.knot.
DR	Intercept; IPK001345; Glyco.hormone.beta.
DR	Intercept; IPK001345; Glys.knot.
DR	SMART; SMD0061; Glys.knot.
DR	SMART; SMD0061; Glys.knot.
DR	PROSITE; PS00261; GLYCO_HORMONE_BETA.1; UNKNOWN.1.
DR	SEQUENCE 165 AA, 17680 MW; 3E72406F1813BA69 CRC64;
DR	SEQUENCE 165 AA, 17680 MW; 3E72406F1813BA69 CRC64;

	Best Local Similarity	82.0%	Prod. No. 1.1e-46	Indels	0	Gaps
	Matches 114	Conservative	7	Mismatches 16		
QY	2	SKELPRCRINATLAVRESCPCVITTCICAGYCFRTVRQGVLPALPQVNCVR	61			
QY	21					
DB	21	SRELPRLRCINATLAVRESCPCVITTCICAGYCFRTVRQGVLPALPQVNCVR	80			
QY	62	DYVRESLRPLRCQVPPVNVVYKAVNLSOCALCRSTDCGCKPHRPLTCDPDPFOGSS	121			
DB	62					
QY	81	EYVRESLRPLRCQVPPVNVVYKAVNLSOCALCRSTDCGCKPHRPLTCDPDPFOGSS	140			
DB	81					
QY	122	SKAPPSPSLPSRLPGPSD	140			
DB	122					
QY	141	SDPPSPSPSPSGLEPAD	159			
DB	141					

[illegible]

RT-PCR analysis of the expression of the monkey DNA transposon  
in mice induced by the friend's monkey DNA immunization.\*  
Submitted (JAN - 2001) to the EMBL/GenBank/DBS  
EMBL: AF131067; Accession number: AF09432.1;  
HSP: P01233; 1XUL.  
InterPro: IPR001359; Cys\_knot.  
InterPro: IPR001545; Glyco\_hormone\_beta.  
Pfam: PF00007; Cys\_knot: 1.  
SMART: SM00069; GHB: 1.  
PROSITE: PS00268; GLYC\_HORMONE\_BETA\_1; UNKNOWN\_1.  
PROSITE: PS00268; GLYC\_HORMONE\_BETA\_1;  
SEQUENCE 165 AA, 17680 MW, 3E74V00F8I13BA69 CRC64;  
Query Match Score 616; DB 11; Length 165;

Query Match 79.3%; Score 616; DB 6; Length 165;  
Best Local Similarity 82.0%; Pred. No. 1.1e-60;  
Matches 114; Conservative 7; Mismatches 18; Indels 0; Gaps 0;

[illegible]

## RESULT 4

099P48  
D 099E

Q99E 01-1

01-5  
01-5

CHOR  
Mig

Euk

NCBI

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Cher

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tut

EMBL  
SUBMITTER

OR HSE  
OR Inte

Inte  
Pfam

FOR	SMAF
OR	PROG

PROS  
SEFO

Quercus

—



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FT  SQ  SEQUENCE  141 AA;  15122 MW;  690EFD3CA55A6A3 CRC64;  SUBUNIT.
Query Match  51.5%;  Score 400;  DB 11;  Length 141;
Best Local Similarity  61.9%;  Pred. No. 8, Be-37;
Matches 70;  Conservative 14;  Mismatches 29;  Indels 0;  Gaps 0;

QY  2  SKRLPRLPRINATLAVEKGGPCVITVNTITGAGYCTPTMRVLAGVLPALPQVVCNTR 61
Db  21  SGLGLPRLPRINATLAVEKGGPCVITVNTITGAGYCTPTMRVLAGVLPALPQVVCNTR 80
QY  62  DYVRESITRLGCPGVNPVYVALSCCALCRSTTIGDGGPDHPILTCDDP 114
Db  81  ELRFASIRLPGCPGVNPVYFVPVALLSGCTGRLSLNSDGGSLGRLGQPSACELP 133

RESULT 10
Q95JH8 PRELIMINARY;  PRT:  141 AA.
AD  Q95JH8
CD  Q95JH8
DT  01-DEC-2001 (TEMBLrel. 19, Created)
DT  01-DEC-2001 (TEMBLrel. 19, Last sequence update)
DE  LUTEINIZING HORMONE BETA CHAIN.
DE  LUTEINIZING HORMONE BETA CHAIN.
OC  Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC  Mammalia; Metatheria; Didelphimorphia; Didelphidae; Monodelphis.
RN  1  taxid:13616;
RN  11  taxid:13616;
RP  SEQUENCE FROM N.A.
RC  TISSUE=PIUITARY;
RA  Kacsch B.;
RT  "Cloning of a cDNA encoding the luteinizing hormone beta chain
RT  precursor in the marsupial, Monodelphis domestica.";
RT  Submitted (SEP-2001) to the EMBL/Genbank/DBD databases.
SQ  SQ  SEQUENCE  141 AA;  15031 MW;  5A58E5E4D1ED2085 CRC64;

Query Match  49.0%;  Score 381;  DB 6;  Length 141;
Best Local Similarity  49.1%;  Pred. No. 1, Le-34;
Matches 66;  Conservative 11;  Mismatches 31;  Indels 0;  Gaps 0;

QY  7  RPRCPRLINATLAVEKGGPCVITVNTITGAGYCTPTMRVLAGVLPALPQVVCNTRVRE 66
Db  27  RPRCPRLINATLAVEKGGPCVITVNTITGAGYCTPTMRVLAGVLPALPQVVCNTRVRE 86
QY  67  SLRLPGRCPGVNPVYVALSCCALCRSTTIGDGGPDHPILTCDDP 114
Db  87  WIRLPGCPGVNPVIFSEFPVALLSCAGCSRLSHSDGGSPRRPHLCRTP 134

RESULT 11
Q98YR3 PRELIMINARY;  PRT:  140 AA.
AC  Q98YR3
ID  Q98YR3;  2001 (TEMBLrel. 17, Created)
DT  01-JUN-2001 (TEMBLrel. 17, Last sequence update)
DT  01-DEC-2001 (TEMBLrel. 19, Last annotation update)
DE  LUTEINIZING HORMONE BETA SUBUNIT.
DE  Mylopharyngodon plicus.
OC  Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC  Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC  Cypriniformes; Cyprinidae; Mylopharyngodon.
NCBI_Taxid=75356;
RN  11
RP  SEQUENCE FROM N.A.
RC  Bayer-Eitzenberg D.; Rosenfeld H.; Zmor N.; Yaron Z.; Elizur A.;
RT  "Isolation and characterization of the cDNA caryop 14 beta subunit.";
RT  Submitted (NOV-2000) to the EMBL/Genbank/DBD databases.
SQ  SQ  SEQUENCE  140 AA;  15060 MW;  5B8D1A6E8B8A6A3 CRC64;

DR  SMBL: A613960; AAK07414.1;
DR  HSP: P01233; LXUL
DR  InterPro: IPR000359; Cys_Knot.
DR  InterPro: IPR001545; Glyco_hormone_beta.

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[illegible]

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09DC80      QPC80    PRELIMINARY;          PRT:   140 AA..
ID           ID           AC
QPC80       QPC80
01-MAR-2001 (TEMBLrel. 16, Created)
01-MAR-2001 (TEMBLrel. 16, Last sequence update)
01-DEC-2001 (TEMBLrel. 19, Last annotation update)
GONADOTROPIN BETA 2 SUBUNIT
ICALURUS punctatus (Channel catfish).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Actinopterygii; Neoceratarii; Teleostei; Euteleostei; Ostariophysi;
Siluriformes; Ictaluridae; Ictalurus.
[1]-TaxId=7958;
[1]-Sequence FROM N.A. STRAIN-KANSAS;
Liu Z.J., Kim S., Karai A., Dunham R.;
"Channel catfish gonadotropin beta-subunits: cDNA cloning and their
expression during ovulation."
Submitted (DEC-1998) to the EMBL/GenBank/DDBJ databases.
EMBL; AF111192; AKG32156.1; -.
XSSP; PO12133; KXUL.
InterPro; IPR001545; Glyco_hormone_beta.
Pfam; PF00007; Cys_knot; 1.
SMART; SM00688; GHB; 1.
PROSITE; PS00261; GLYCO_HORMONE_BETA_1; UNKNOWN.1.
SEQUENCE 140 AA; 15787 MW; AAA7CAA7E3D2B82 CRC64;
Query Match        37.3%; Score 290; DB 13; Length 140;
Best Local Similarity 46.5%; Pred. No. 1.4e-24;
Matches         Conservative 19; Mismatches 33; Indels 0; Gaps 0;
OY           OY
1 PKSEILPRCPRIATNALIVKESGPCVITMTTTCAGCTPTTGVLGPALPGVCNY 60
20 PAQSYYLLDPCEPVNTSVVEKDSCPKCLVFQTACSGHCLTKPEVKSPFSNIYHQVTY 79
DB           DB
61 RDVRFSLRLPGCPRGVNPVSVAVALSOCALCRSTDDC 101
|||||::||| |::| ||::| |||::| |||::| :||:
80 RDVTRFLPLDCRGVDGVHPHTVPVALISCETLCITMDSDC 120
|||||::||| |::| ||::| |||::| |||::| :||:
RESULT 16
046618     PRELIMINARY;          PRT:   89 AA..
ID         ID         AC
O46618     O46618
01-JUN-1998 (TEMBLrel. 06, Created)
01-JUN-1998 (TEMBLrel. 06, Last sequence update)
01-DEC-2001 (TEMBLrel. 19, Last annotation update)
LUTENIZING HORMONE/CHORIONIC GONADOTROPHIN BETA-SUBUNIT
(EQUINE)
[1]-CG-BEST.
Equus zebra hartmannae
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Perissodactyla; Equidae; Equus.
NCBI_TaxId=73335;
[1]
SEQUENCE FROM N.A.
Sticher S., Veits J., Meyer H.H.D.;
"Amino acid sequence of the beta-LH determinant loop
of different pituitary gonadotrophs and the estimated impact on the
biological activity."
Submitted (FEB-1998) to the EMBL/GenBank/DDBJ databases.
EMBL; AF047602; AACQ4360.1; -.
XSSP; PO12333; IXUL.
InterPro; IPR001559; Cys_knot.
InterPro; IPR001545; Glyco_hormone_beta.
Pfam; PF00007; Cys_knot; 1.
SMART; SMU0068; GHB; 1.
PROSITE; PS00689; GLICO_HORMONE_BETA_2; 1.
Chorion.
NON TER            1             1
SEQUENCE 89 AA; 9325 MW; 2AD973AC7EAC5C8 CRC64;

```

		Query Match	37.1%; Score 288; DB 6; Length 89;
		Best Local Similarity	62.2%; Pred. No. 1, 5e-24;
		Matches	56; Conservative 8; Mismatches 22; Indels 4; Gaps 2;
OY	44	VRLQGLVPLPVCNRYDRVFESIRLPGCPGVNPVSYVALSCOCALCRSTRITDGGG 103	
DB			
DB	2	RYPMAALPPVPQCTVRELAFASIRLPGCPGVDPHVSFPVALSGRCGRLLATDGGG 61	
OY	104	EKRHLTCDDPRFQSSSKAPPSLPSPS 133	
OY		I:      I:            I:	
DB	62	FROHFLACAP--QAQSSSK-DPPSOPLTS 87	
DB			
RESULT 17			
Q91999		PRELIMINARY; PRT; 137 AA.	
ID	Q91999		
AC	Q91999		
DT	01-OCT-2000 (TEMBLrel. 15, Created)		
DT	01-OCT-2000 (TREMBLrel. 15, Last sequence update)		
DE	01-DEC-2001 (TEMBLrel. 19, Last annotation update)		
DE	LUTEINIZING HORMONE PRECURSOR.		
DE	LH.		
GN	Acipenser baeri1 (Siberian sturgeon).		
OS	Chondrosteomiformes; Chondrosteomidae; Acipenseridae;		
OC	Actinopterygii; Chondrostei; Acipenseriformes; Acipenseridae;		
OC	Acipenserinae; Acipenser.		
OX	NCBI_TaxID=27689;		
ON	[1]		
RP	SEQUENCE FROM N.A.		
RP	TISSUE=PITUITARY;		
RA	MEDLINE=20318422; Pubmed=10859263;		
RA	Querat B., Sellouk A.; Salmon C.		
RT	Phylogenetic analysis of the vertebrate glycoprotein hormone family		
RT	Two gonadotropins and the thyroid stimulating hormone.;		
RT	The gonadotropin and the thyrotropin releasing hormone subunits of the		
BL	Biol. Reprod. 63:222-228(2000).		
BL	EMBL; AJ251656; CAB93502.1; ..		
DR	HSSP: P01233; 1XUL.		
DR	InterPro: IPR00359; Cys_knot.		
DR	InterPro: IPR001545; Glyco_hormone_beta.		
DR	Pfam: PF00007; Cys_knot; 1.		
KW	SMART; SMO0068; GHb; 1.		
KW	Signal.		
FT	CHAIN: 1..22 POTENTIAL		
FT	CDS: 23..137 LUTEINIZING HORMONE.		
FT	SEQUENCE 137 AA; 14757 MW; 37CFF80BB2955607 CRC64;		
QUERY MATCH	36.2%; Score 281; DB 13; Length 137;		
Best Local Similarity	45.5%; Pred. No. 1, 4e-23;		
Matches	46; Conservative 21; Mismatches 30; Indels 4; Gaps 1;		
OY	10	CRFINATLAYEGECPCVTNTTICAGYCPMTVRVLQGLPALPVCYNRYDRVFESIR 69	
DB		:           :           :           :	
DB	26	CEPVNETAISAEKEEPCLLQTQSISGCPTKPFKSALSTVOQRVCTIKRFAIVT 85	
OY	70	LPGCPGVNPVSYVALSCOCALCRSTRITDGG---GRKD 106	
OY			
DB	86	LPOCPGVDPHTFTPLALSCBLSLRMESSOICTIQSVGSD 126	
DB			
RESULT 18			
Q90WC1		PRELIMINARY; PRT; 137 AA.	
ID	Q90WC1		
AC	Q90WC1		
DT	01-DEC-2001 (TEMBLrel. 19, Created)		
DT	01-DEC-2001 (TREMBLrel. 19, Last sequence update)		
DE	01-SEP-2001 (UNIPROT) REF. SUBMITT.		
DE	UNIPROT ID: BETA_5UBUNTU.19, Last annotation update)		
OS	Xenopus laevis (African clawed frog).		
OS	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;		
OC	Amphibia; Batrachia; Anura; Mesobatrachia; Pipidea; Pipidae;		
OC	Xenopodinae; Xenopus		

OX	NCBI_TaxID=8155;
LN	(1)
RN	SEQUENCE FROM N.A.
RC	TISSUE=PITUITARY
RP	HUHLING-2130951;
RA	HUHLING-2130951; PubMed=110476;
RT	"Timing of metamorphosis and the onset of the negative feedback loop
RT	between the thyroid gland and the pituitary is controlled by type II
RT	iodothyronine deiodinase in Xenopus laevis";
RT	DOI=10.1006/gen.1996.0086; J.A. 98:7348-7353(2001).
DI	EMBL: AF361031; GenBank: U00986; S.A. 98:7348-7353(2001).
DB	SEQUENCE 137 AA; 15272 MW; GB213F1200FOE197 CRC64.

	Query Match	33.3%	Score 259	DB 13	Length 137
	Best Local	Similarity 42.1%	Protein 3	Residues 32	
	Matches 40	Conservative 23	Mismatches 3	Indels 0	Gaps
Qy	7	RPRCAPRNATLAVEKGGCPVCTVITICAGYCTPTKRLQVGLPALPOLVCMYKDYRFE	56		
Db					
Qy	8	RRLHPTNATISAKDQPCIVLTCTTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCT	80		
Db					
Qy	67	STLEKPCRGPNVYSVAVALSCGCAACRSTTDC	101		
Db					
Qy	91	TIKLPDLGPTDPTFTYPAVSCSKNCKMCKDQSP	115		
Db					

[illegible]

	Query Match	33.3%	Score 236	DB 13	Length 121
	Best Local Similarity	44.7%	Prots 4	48-20	
	Matches 46	Conservative 17	Mismatches 40	Indels 0	Gaps
9	RCRPNATLAVEREKSPVCITVNTTTCAGCQPMTRVLQGVLPVQVVCVNRDRESI 68				
DB	9	RCRPNATLAVEREKSPVCITVNTTTCAGCQPMTRVLQGVLPVQVVCVNRDRESI 68			
60	RCOLTNLTAVEREKSPVCTNMTWAGCTCGFCKPGRKSHWISITDCISKEIIVETI 65				
DB	60	RCOLTNLTAVEREKSPVCTNMTWAGCTCGFCKPGRKSHWISITDCISKEIIVETI 65			
69	RLPCCPRGVNVSVAVALSCGCAKRESCCTGCKPGRKHPLTC 111				
DB	69	RLPCCPRGVNVSVAVALSCGCAKRESCCTGCKPGRKHPLTC 111			
66	TIPNCIPANRVNVTYPVAISCGGNCMTETDXTCVSMEPTIC 108				
DB	66	TIPNCIPANRVNVTYPVAISCGGNCMTETDXTCVSMEPTIC 108			

RESULT 20  
Q90MG9 ID Q90MG9 PRELIMINARY; PRT: 138 AA.  
AC Q90MG9;  
Tr 01-DEC-2001 (TrEMBLrel. 19, Created)

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DT 01-DEC-2001 (TEMBREL. 19, Last sequence update)
DE 01-DEC-2001 (TEMBREL. 19, Last annotation update)
DI LUTEMIZING HORMONE BETA SUBUNIT PRECURSOR.
DS Enkephalibeta (Lauzling frog) (Marsh frog).
EA Enkephalibeta (Lauzling frog) (Marsh frog).
OC Amphibia; Batrachia, Anura; Neobatrachia, Ranidae; Eutelaestomi;
ON NCBI_TaxID=8406;
RX [1]
RY SEQUENCE FROM N.A.
RP SEQUENCE 138 AA; 15701 MW; 9C1E90777B34B6CF CRC64;
RC TISSUE=PIUITIARY;
RA Querat B.;
RL "Evolution of glycoprotein hormones in gnathostomes.";
RM Submitted (MAY-2001) to the EMBL/GenBank/DDJB databases.
RS EMBL; AJ311521.1; EMBL; CAC3252.1;
RT SIGNAL
FT SIGNAL 1 26 POTENTIAL
FT CHAIN 27 138 LUTEINIZING HORMONE BETA SUBUNIT.
SQ SEQUENCE 138 AA; 15701 MW; 9C1E90777B34B6CF CRC64;

Query Match 33.18; Score 257; DB 13; Length 138;
Best Local Similarity 41.99; Pred. No. 6.4e-21;
Matches 44; Conservative 19; Mismatches 42; Indels 0; Gaps

QY 7 RPRCRNPATLAVEKSGPCVITWTTCGTCPTMTWVQGVLPALPVQWCVNRDVRFE 66
   |||||:::|||||:::|||||:::|||||:::|||||:::|||||:::
DQ 27 RHILNHLANTINSGRQPCVFTVITTCGTCOTLDLPVAFPPKRCITREIRD 86
   |||||:::|||||:::|||||:::|||||:::|||||:::|||||:::
OY 67 SRILGDCPRGVNPSVAVALSCGACSRSTDCGGKDPKDTCT 111
   |||||:::|||||:::|||||:::|||||:::|||||:::|||||:::
DY 87 TIKLPCGLPTDPTFTYPAVSCYCDPCAKMDYSDCTVSESSEPDVC 131
   |||||:::|||||:::|||||:::|||||:::|||||:::|||||:::

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RESULT	21
SEQUENCE	1
AC	GDSHDO
TC	GDSHDO
PRELIMINARY;	PRT; 146 AA.
DT	01-MAR-2001 (TRENBLREL_16, Crested)
DT	01-MAR-2001 (TRENBLREL_16, Last sequence update)
DT	01-DEC-2001 (TRENBLREL_19, Last annotation update)
DE	CONADOTROPIN II BETA SUBUNIT PRECURSOR.
DE	Pagrus major [Red sea bream] (Chrysophrys major).
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC	Actinopterygii; Neocypristini; Teleostei; Euteleostei; Neoteleostei;
OC	Acanthomorpha; Acanthopterygii; Percomorphi; Perciformes; Percoidae;
OC	Sparidae; Pagrus
NCBI_Taxid=	143350;
RN	11
SEQUENCE FROM N.A:	
RP	MEDLINE=20318432; PubMed=10859273;
RX	Gen K., Okuzawa K., Senthilkumaran B., Tanaka H., Moriyama S.,
RA	Kagaoka H.;
RA	"Unique expression of gonadotropin-I and -II subunit genes in male and female red seabream ( <i>Pagrus major</i> ) during sexual maturation.";
RT	Biol. Reprod. 63:308-319(2000).
RL	EMBL; AB028213; BAB18564.1; .
RL	HSSP; P01233; 1XOL.
DR	InterPro; IPR000359; Cys_knot.
DR	SMART; SMART001343; Glyco_Normone_Beta.
DR	PROSITE; PS00068; GHF1; 1.
DR	SMART; SMART00068; GHF1; 1.
DR	PROSITE; PS00261; GLYCO_HORMONE_BETA_1; UNKNOWN_1.
KW	SIGNAL.
FT SIGNAL	1 14 POTENTIAL.
SQ	SEQUENCE 146 AA; 16320 MW; 1E8F429CE5BEF82 CRC64;

	Query Match	33.1%	Score 257	DB 13	Length 146
	Best Local Similarity	46.2%	Prod. No. 6.8e-21		
	Matches 48	Conservative 17	Mismatches 37	Indels 2	Gaps 1
QY	8	PCRPRNATLAVEEGCPVCITWNTICAGYCPTMTVLQGVLPALPQVNCYRDVAFES	67		
DB	37	PPCQLQNTLSLEKSGKCPHPVETTTSSGRCITNDPMVK--TRYVYGVCTYRDLYHKT	94		



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OY 68 IRLPGCGVNVVYAVALSOCALCRSTTDCGPKDRPLTC 111
    ||||| 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1
DB 95 FELPDCPPGVDPVTYTPVAVSCRGICAMOTSDCTFESLEPNEC 138

RESULT 22
OY 68 IRLPGCGVNVVYAVALSOCALCRSTTDCGPKDRPLTC 111
AC O46622 PRELIMINARY; PRT: 82 AA.
DT 01-JUN-1998 (TREMBLrel. 06, Created)
DT 01-JUN-1998 (TREMBLrel. 06, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE LUTEINIZING HORMONE BETA-SUBUNIT (FRAGMENT).
GN LH-BETA.
OS Ceratotherium simum simum.
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Perissodactyla; Rhinocerotidae; Ceratotherium.
OX NCBI_TaxID=7337;
RN
RP SEQUENCE FROM N.A.
RA Fischer S., Velts J., Meyer H.H.D.;
RT "Nucleotide and amino acid sequence of the beta-LH determinant loop
RT from different perissodactyls and the estimated impact on the
RT biological activity.";
RL Submitted (F88-1998) to the EMBL/GenBank/DDAJ databases.
DR EMBL: AF047607; NC004365.1;
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR001545; Glyco_hormone_beta.
DR Pfam: PF00007; Cys_knot; 1.
DR SMART: SM00068; GHb; 1.
DR PROSITE: PS00069; GLYCO_HORMONE_BETA_2; 1.
FT NON_TER 1
SQ SEQUENCE 82 AA; 8643 MW; 270411BA19B78A37 CRC64;

Query Match 32.94; Score 256; DB 6; Length 82;
Best Local Similarity 59.54; Pred. No. 3e-21;
Matches 44; Conservative 11; Mismatches 19; Indels 0; Gaps 0;

OY 41 TWTRVLQGLPALPOVYCNVYRVFESIRLPGCGVNVVYAVALSOCALCRSTTD 100
    :|||: ||||| 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1
DB 1 SMRVNMPALPPAPOPVCTYTHLRFASIRLPGCGVNVVYAVALSOCALCRSLSSD 60

OY 101 CGGPKDRPLTCDDP 114
    ||||| 1:1 1:1 1:1
DB 61 CGGPRAGPLACDRP 74

RESULT 23
ID O63013 PRELIMINARY; PRT: 80 AA.
AC O63013
DT 01-NOV-1996 (TREMBLrel. 01, Created)
DT 01-NOV-1996 (TREMBLrel. 01, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE TESTICULAR LUTEINIZING HORMONE BETA SUBUNIT.
GN TLHB3.
OS Rattus norvegicus (rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Rattus.
OX NCBI_TaxID=10116;
RN
RP SEQUENCE FROM N.A.
RA STRAIN-SPRAQUE DAWLEY;
RC MEDLINE-95283549; PubMed-7763258;
RA Zhang F.P., Rannikko A., Huhtaniemi I.;
RT "Isolation and characterization of testis-specific cDNAs for
RT luteinizing hormone beta-subunit in the rat.";
RL Biochem. Biophys. Res. Commun. 210:858-865(1995).
DR EMBL: U25803; AAC52251.1;
DR HSSP: P01233; IXUL.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR001545; Glyco_hormone_beta.

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DR Pfam: PF00007; Cys_knot; 1.
DR SMART: SM00068; GHb; 1.
DR PROSITE: PS00069; GLYCO_HORMONE_BETA_2; 1.
SQ SEQUENCE 80 AA; 8515 MW; F9EA66C2FD6FC97D CRC64;

Query Match 32.94; Score 255.5; DB 11; Length 80;
Best Local Similarity 61.64; Pred. No. 3e-21;
Matches 43; Conservative 11; Mismatches 16; Indels 1; Gaps 1;

OY 42 MYRVLQGLPALPOVYCNVYRVFESIRLPGCGVNVVYAVALSOCALCRSTTDC 101
    ||||| 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1
DB 1 MYRVLPAALPPVPPVCTYRE-REASVRLPGCGVNVVYAVALSOCALCRSLSSDC 59

OY 102 CGGPKDRPLTCDDP 114
    ||||| 1:1 1:1 1:1
DB 60 GGPRTQPMTCDDP 72

RESULT 24
ID O90W55 PRELIMINARY; PRT: 145 AA.
AC O90W55
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE GONADOTROPIN (GTH-II) BETA SUBUNIT.
OS Parachanna olivacea (Flounder).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
OC Acanthomorpha; Acanthopterygii; Percomorpha; Pleuronectiformes;
OC Pleuronectoidae; Paracanthopterygii; Paracanthopterygii; Paracanthopterygii;
OX NCBI_TaxID=8255;
RN
RP SEQUENCE FROM N.A.
RC TISSUE-PITUITARY; PubMed-11316417;
RA Kallman, M.D., Schreiner, W.E., Suzuki, M., Alda K.;
RT "cDNA cloning of two gonadotropin beta subunits (GTH-Ibeta and
RT -IIbeta) and their expression profiles during gametogenesis in the
RT Japanese flounder (Parachanna olivacea).";
RL Gen. Comp. Endocrinol. 122:117-129(2001).
DR EMBL: AB042423; BAB47388.1;
SQ SEQUENCE 145 AA; 16295 MW; 8DDCE52EE3E750CC CRC64;

Query Match 32.64; Score 253.5; DB 13; Length 145;
Best Local Similarity 44.64; Pred. No. 1.6e-20;
Matches 50; Conservative 18; Mismatches 43; Indels 1; Gaps 1;

OY 8 PCRPINATLAVREKCPVCTVNTTCAGYCTMTYRVLQGLPALPOVYCNVYRVFES 67
    :|||: ||||| 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1
DB 34 PTCLLINOTVSLKESGCPKCHVTETTCGHCCTKDPVAKIPFLNMQHVCTQELTKT 93

OY 68 IRLPGCGVNVVYAVALSOCALCRSTTDCGPKDRPLTC-DDPRPD 118
    ||||| 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1 1:1
DB 94 FELPDCPPGVDPVTYTPVAVSCYCGRCALNTSDCTFQSLQDFCNDIPFD 145

RESULT 25
ID O9DC81 PRELIMINARY; PRT: 132 AA.
AC O9DC81
DT 01-MAR-2001 (TREMBLrel. 16, Created)
DT 01-MAR-2001 (TREMBLrel. 16, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE GONADOTROPIN BETA 1 SUBUNIT.
OS Ictalurus punctatus (Channel catfish).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Siluriformes; Ictaluridae; Ictalurus.
OX NCBI_TaxID=7998;
RN
RP SEQUENCE FROM N.A.

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RC STRAIN-KANSAS;
RA Liu Z.J., Kim S., Karsl A., Dunham R.;
RT "Channel catfish gonadotropin beta-subunits: cDNA cloning and their
   expression during ovulation.";
RL Submitted (DEC-1998) to the EMBL/GenBank/DBJ databases.
RS K88; AF11191; X88;
DR K88; AF11191; X88;
DR InterPro: IPR000359; Cys_knot.
DR Pfam: PF00007; Cys_knot; 1.
DR SMART: SM00068; GHB; 1.
DR PROSITE: PS00261; GLYC_HORMONE_BETA_1; UNKNOWN.1.
SQ SEQUENCE 132 AA: 14560 MW: 9BAEB9D425B54038 CRC64;

Query Match      32.3% Score 251; DB 13; Length 132;
Best Local Similarity 43.8%; Pred. No. 2.8e-20;
Matches 46; Conservative 15; Mismatches 44; Indels 0; Gaps 0;

QY 7 RPRCREINATLAVEKEGCPGCTVNTTTCAGYCTMTVUQGLPALPOVGNVRYHFE 66
   :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
Db 22 KARCLTNISITVESDEGSCITVNTTACTGLCRTQERAVESPVAPYFQNTCNERDWTYE 81
   :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:

QY 67 SIRLPCPGVNPVSVAYALSCQALCRESTQCGPKDHLTC 111
   :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
Db 82 TIQLPCPLAVDSSTYPVALSCQSCQNTETIDCGAFSQPSSC 126
   :|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:

Search completed: October 11, 2002, 11:59:08
Job time : 73 secs

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GenCore version 5.1.3  
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OM protein - protein search, using sw model

Run on: October 11, 2002, 17:57:02 : Search time 31 Seconds  
(without alignments)  
505.207 Million cell updates/sec

Title: US-09-813-398-3

Perfect score: 777

Sequence: 1 PSKEPUPRCPNPATLAVE.....SKAPPSPSPRLPQSDT 141

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 111073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 350 summaries

Database : A\_Geneseq\_032802.\*

- 1: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1980.DAT.\*
- 2: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1981.DAT.\*
- 3: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1982.DAT.\*
- 4: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1983.DAT.\*
- 5: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1984.DAT.\*
- 6: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1985.DAT.\*
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- 20: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA1999.DAT.\*
- 21: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA2000.DAT.\*
- 22: /SIDSL/gcgdata/geneseq/geneseq-emb1/AA2001.DAT.\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	770	99.1	140	21	Human chorionic go
2	770	99.1	145	20	Human chorionic go
3	770	99.1	145	20	Human chorionic go
4	770	99.1	145	22	Human chorionic go
5	770	99.1	145	22	Human chorionic go
6	770	99.1	145	22	Human chorionic go
7	770	99.1	145	22	Beta-subunit of Hu
8	770	99.1	145	22	Human chorionic go
9	770	99.1	145	22	Beta-human chorion
10	770	99.1	145	22	Beta subunit of hu
11	770	99.1	165	12	Human chorionic go

12	770	99.1	165	20	AA105748	Human chorionic go
13	770	99.1	165	20	AA195533	Human chorionic go
14	770	99.1	165	21	AA153538	Human chorionic go
15	770	99.1	165	22	AA149896	Human chorionic go
16	770	99.1	203	20	AA143298	HCG beta subunit-J
17	770	99.1	206	20	AA143303	HCG beta subunit-J
18	770	99.1	206	20	AA143303	HCG beta subunit-J
19	770	99.1	206	20	AA143303	HCG beta subunit-J
20	770	99.1	212	20	AA143278	HCG beta subunit-J
21	770	99.1	212	20	AA143304	HCG beta subunit-J
22	770	99.1	265	22	AAU04602	Single chain gonad
23	770	99.1	265	22	AAU04614	Single chain gonad
24	770	99.1	265	22	AAE04474	Human single chain
25	770	99.1	265	22	AAE04486	Human single chain
26	770	99.1	273	20	AA143292	HCG beta subunit-J
27	767	98.7	165	19	AA147473	Human chorionic go
28	767	98.7	165	19	AA147473	Human chorionic go
29	767	98.7	165	19	AA147473	Human chorionic go
30	766	98.6	145	20	AA195530	Human chorionic go
31	766	98.6	165	20	AA195508	Glycoprotein hormo
32	766	98.6	176	21	AA157315	Human betaHCG/beta
33	766	98.6	252	21	AA157315	Alpha-mating facto
34	765	98.5	145	12	AA151571	HCG methionine sub
35	765	98.5	145	12	AA151571	HCG histidine subs
36	765	98.5	165	20	AA195514	Glycoprotein hormo
37	765	98.5	165	20	AA195507	Glycoprotein hormo
38	765	98.5	165	20	AA195509	Glycoprotein hormo
39	764	98.3	145	14	AA109899	Human chorionic go
40	764	98.3	145	14	AA131200	Human chorionic go
41	764	98.3	165	20	AA195512	Glycoprotein hormo
42	764	98.3	165	20	AA195506	Glycoprotein hormo
43	764	98.3	165	20	AA195510	Glycoprotein hormo
44	764	98.3	165	20	AA195511	Glycoprotein hormo
45	764	98.3	181	22	AAU04613	Gonadotropin analo
46	764	98.3	181	22	AAU04613	Gonadotropin analo
47	764	98.3	181	22	AAU04613	Gonadotropin analo
48	763	98.2	145	12	AA151574	HCG histidine subs
49	763	98.2	145	12	AA151574	HCG histidine subs
50	762	98.1	165	20	AA195515	HCG-beta analogue
51	762	98.1	165	20	AA195513	Glycoprotein hormo
52	762	98.1	165	20	AA195515	Glycoprotein hormo
53	761	97.9	165	20	AA195534	HCG-beta analogue
54	761	97.9	165	20	AA195538	HCG-beta analogue
55	761	97.9	265	16	AA186247	Single chain gonad
56	761	97.9	265	16	AA186247	Partially deglycos
57	759	97.7	144	12	AA151578	HCG histidine subs
58	759	97.7	145	12	AA151503	HCG/hLH chimera, D
59	759	97.7	145	12	AA151520	HCG/hLH chimera, A
60	759	97.7	145	12	AA151520	HCG/hLH chimera, A
61	759	97.7	145	12	AA151520	HCG/hLH chimera, A
62	757	97.4	145	18	AA127682	Chorionic gonadotr
63	756	97.3	145	12	AA151517	HCG/hLH chimera, A
64	756	97.3	145	12	AA151517	HCG histidine subs
65	756	97.3	145	18	AA127688	Chorionic gonadotr
66	755	97.2	145	18	AA127687	Chorionic gonadotr
67	755	97.2	181	16	AA186258	Human CG beta-subu
68	754	97.0	145	12	AA150655	HCG/hFSH chimera, E
69	754	97.0	145	12	AA151510	HCG/hLH chimera, E
70	754	97.0	145	18	AA127686	Chorionic gonadotr
71	753	96.9	145	18	AA127681	Chorionic gonadotr
72	752	96.8	165	20	AA195541	HCG-beta analogue
73	750	96.3	145	12	AA151512	HCG/hLH chimera, E
74	749	96.4	145	12	AA151512	HCG/hLH chimera, E
75	749	96.4	145	12	AA151518	HCG/hLH chimera, A
76	749	96.4	204	20	AA143270	Human CG beta subu
77	749	96.4	204	20	AA143270	Human CG beta subu
78	749	96.4	208	20	AA143306	Human CG alpha sub
79	748	96.3	145	12	AA151514	HCG/hLH chimera, A
80	748	96.3	145	12	AA151514	HCG/hLH chimera, A
81	748	96.3	145	18	AA127679	Chorionic gonadotr
82	747	96.1	145	12	AA151515	Chorionic gonadotr
83	746	96.0	145	12	AA151508	HCG/hLH chimera, A
84	746	96.0	145	12	AA151501	HCG/hLH chimera, D

85	746	96.0	145	12	AAR15176	hcg histidine subs
86	746	96.0	145	22	AAR48385	Human chorionic go
87	745	95.9	145	12	AAR15100	hcg/bHh chimera, D
88	745	95.9	145	12	AAR15098	hcg/bHh chimera, D
89	744	95.8	145	18	AAR27678	Chorionic gonadotr
90	743	95.6	145	12	AAR15102	hcg/bHh chimera, D
91	743	95.6	145	12	AAR15095	hcg/bHh chimera, D
92	743	95.6	145	12	AAR15095	hcg/bHh chimera, D
93	743	95.6	263	22	AAR04518	Modified hcg beta-
94	741	95.4	145	12	AAR15063	hcg analogue-D bet
95	741	95.4	145	21	AAR15063	hcg/hfsh chimera, D
96	740	95.2	204	20	AY47479	Human chorionic go
97	740	95.2	307	18	AAR13358	Human CG beta subu
98	740	95.2	336	18	AAR13358	TBP(20-161)/hcg-be
99	739	95.1	145	12	AAR15097	hcg/bHh chimera, D
100	738	95.0	145	12	AAR15066	hcg/hfsh chimera,
101	738	95.0	145	12	AAR15089	hcg/hfsh chimera,
102	738	95.0	145	12	AAR15089	hcg/hfsh chimera,
103	736	94.7	145	12	AAR15082	hcg/hfsh chimera,
104	736	94.7	145	18	AAR27683	Chorionic gonadotr
105	735	94.6	145	12	AAR15116	hcg/bHh chimera, A
106	735	94.6	145	12	AAR15109	hcg/bHh chimera, E
107	734	94.5	265	16	AAR86269	Single chain gonad
108	732	94.2	141	12	AAR15168	hcg deletion mutan
109	732	94.2	145	12	AAR15125	hcg/bHh chimera, A
110	732	94.2	145	12	AAR15092	hcg deletion mutan
111	731	94.1	133	12	AAR15184	hcg/bHh chimera, A
112	731	94.1	145	12	AAR15082	hcg/bHh chimera, D
113	730	94.0	145	12	AAR15089	Chorionic gonadotr
114	730	94.0	145	18	AAR27680	hcg deletion mutan
115	728	93.7	137	12	AAR15165	hcg/bHh chimera, E
116	728	93.7	137	12	AAR15111	hcg/bHh chimera, E
117	728	93.7	137	12	AAR15111	hcg/bHh chimera, E
118	727	93.6	139	12	AY43266	Human chorionic go
119	726	93.4	145	12	AAR15104	hcg/bHh chimera, D
120	725	93.3	145	12	AAR15074	hcg/hfsh chimera,
121	718	92.4	145	12	AAR15064	hcg/hfsh chimera,
122	718	92.4	145	12	AAR15122	hcg/bHh chimera, A
123	715	92.1	145	12	AAR15087	hcg/bHh chimera,
124	715	92.1	145	12	AAR15087	hcg/bHh chimera,
125	713	91.8	145	12	AAR15124	hcg/hfsh chimera, A
126	708	91.1	145	12	AAR15080	hcg/hfsh chimera,
127	703	90.5	209	20	AY43300	HLA/beta analoge
128	700	90.1	139	12	AAR15061	hcg/hfsh chimera,
129	699	90.0	145	12	AAR15094	hcg/hfsh chimera,
130	694	89.3	138	12	AAR15088	hcg/hfsh chimera, E
131	694	89.3	145	12	AAR15113	hcg/bHh chimera,
132	689	88.7	145	12	AAR15084	hcg/hfsh chimera,
133	687.5	88.5	132	12	AAR95449	Human chorionic go
134	687.5	88.5	132	12	AAR95449	hcg/hfsh chimera,
135	675	86.2	135	12	AAR15089	hcg deletion mutan
136	675	86.2	135	12	AAR15089	hcg deletion mutan
137	674	86.7	145	12	AAR15075	hcg/hfsh chimera,
138	671	86.4	165	20	AAR95359	hcg/hfsh chimera,
139	666.5	85.8	138	12	AAR15166	hcg deletion mutan
140	666	85.7	165	20	AAR95356	hcg/hfsh chimera,
141	659	84.8	145	12	AAR15072	hcg/hfsh chimera,
142	654	84.2	142	20	AAR15076	Glycoprotein hormo
143	653	84.0	145	12	AAR15076	hcg/hfsh chimera,
144	648	83.4	234	22	AAR04475	Single chain gonad
145	648	83.4	234	22	AAR04475	hcg deletion mutan
146	644	82.9	116	12	AAR15162	hcg/hfsh chimera,
147	640	82.4	216	20	AY43282	hcg/hfsh chimera,
148	640	82.4	273	20	AY43286	hcg/hfsh chimera,
149	640	82.4	273	20	AY43286	hcg/hfsh chimera,
150	639	82.2	234	16	AAR86248	Single chain gonad
151	638	82.1	145	12	AAR15073	hcg/hfsh chimera,
152	634	81.6	234	22	AAR04509	Human single chain
153	633	81.5	114	22	AAR04620	hcg deletion mutan
154	633	81.5	114	22	AAR04620	hcg deletion mutan
155	631	81.2	212	20	AY43283	hcg/hfsh chimera,
156	631	81.2	212	20	AY43283	hcg/hfsh chimera,
157	631	81.2	273	20	AY43297	hcg/hfsh chimera,
158	629	81.0	116	12	AAR15172	hcg methionine sub
159	625	80.4	234	16	AAR86260	Partially deglycos
160	623	80.2	165	20	AAR95528	Glycoprotein hormo
161	621	79.9	234	22	AAR04519	Human single chain
162	618	79.5	122	12	AAR15119	hcg/hHh chimera, A
163	618	79.5	124	12	AAR15095	hcg/hfsh chimera,
164	615	79.2	111	12	AAR15161	hcg deletion mutan
165	612	78.9	115	12	AAR15161	Single chain gonad
166	602	78.9	115	12	AAR15161	hcg/hfsh chimera,
167	591.5	76.1	122	12	AAR15108	hcg/hfsh chimera, D
168	589	75.8	122	12	AAR15123	hcg/hfsh chimera, A
169	586	75.4	115	12	AAR15081	hcg/hfsh chimera,
170	582	74.9	234	22	AAR04609	Single chain gonad
171	582	74.9	234	22	AAR04481	Human single chain
172	573	73.7	115	12	AAR15083	hcg/hfsh chimera,
173	573	73.7	234	16	AAR86254	Single chain gonad
174	569	73.2	114	14	AAR15005	Modified hcg beta-
175	568	73.2	114	14	AAR86254	hcg analogue-Q bet
176	561	72.2	114	14	AAR86254	hcg analogue-Q bet
177	561	72.2	114	14	AAR86254	Modified hcg beta-
178	561	72.2	114	14	AAR86254	Modified hcg beta-
179	559	71.9	234	16	AAR86266	Partially deglycos
180	559	71.9	234	16	AAR86249	Single chain gonad
181	559	71.9	234	22	AAR04604	Single chain gonad
182	559	71.9	234	22	AAR04604	Human single chain
183	556.5	71.6	122	12	AAR15107	hcg/bHh chimera, D
184	555	71.4	181	20	AY43279	HLA beta subunit-
185	552	71.4	234	22	AAR04325	Human single chain
186	552	71.4	234	22	AAR04325	hcg/bHh chimera,
187	552	71.4	242	20	AY43293	hcg/bHh chimera,
188	553	71.2	118	12	AAR15070	hcg/hfsh chimera,
189	553	71.2	234	22	AAR04608	Single chain gonad
190	553	71.2	234	22	AAR04480	Human single chain
191	552	71.0	234	16	AAR86261	Partially deglycos
192	552	71.0	234	16	AAR86261	Human single chain
193	549.5	70.7	122	12	AAR04510	hcg/bHh chimera, D
194	549	70.7	237	22	AAR04607	Single chain gonad
195	549	70.7	237	22	AAR04607	Human single chain
196	546	70.3	134	16	AAR86276	Single chain gonad
197	544	70.0	112	22	AAR15070	hcg deletion mutan
198	544	70.0	112	22	AAR15070	hcg deletion mutan
199	544	70.0	121	21	AY92001	Human lutelinsing
200	544	70.0	141	7	AP95002	Sequence of human
201	544	70.0	141	20	AAR95548	hHh-beta analoge
202	544	70.0	141	20	AAR95523	Glycoprotein hormo
203	544	70.0	141	22	AAR17955	Human lutelinsing
204	544	70.0	234	16	AAR86253	Single chain gonad
205	543	69.9	114	22	AAR04494	Human lutelinsing
206	542	69.8	141	20	AAR95521	Glycoprotein hormo
207	540	69.5	117	14	AAR10077	Modified hcg beta-
208	540	69.5	117	14	AAR10077	hcg analogue-hcg be
209	530	69.5	141	20	AAR95519	hcg analogue-hcg be
210	530	69.5	141	20	AAR95519	Single chain gonad
211	539	69.4	141	20	AAR95520	Glycoprotein hormo
212	539	69.4	141	20	AAR95516	Glycoprotein hormo
213	539	69.4	141	20	AAR95516	Glycoprotein hormo
214	539	69.4	234	16	AAR86271	Single chain gonad
215	539	69.4	234	22	AAR04540	Human single chain
216	539	69.4	234	22	AAR04540	Human single chain
217	538	69.2	141	20	AAR95522	Glycoprotein hormo
218	536	69.0	141	20	AAR95524	Glycoprotein hormo
219	536	69.0	141	20	AAR95524	Glycoprotein hormo
220	536	69.0	141	20	AAR95525	Glycoprotein hormo
221	535	68.9	141	20	AAR95547	hHh-beta analoge
222	535	68.9	141	20	AAR95547	Human single chain
223	532	68.5	118	12	AAR15078	hcg/hfsh chimera,
224	532	68.5	118	12	AAR15078	hcg/hfsh chimera,
225	530	68.2	234	16	AAR86265	Partially deglycos
226	528	68.0	237	16	AAR86251	Single chain gonad
227	528	68.0	237	16	AAR86251	Single chain gonad
228	528	68.0	237	22	AAR04476	Human single chain
229	526	67.7	237	22	AAR04524	Human single chain
230	526	67.7	237	22	AAR04524	Partially deglycos

N-glycosylation site; follicle stimulating hormone; luteinising hormone; thyroid stimulating hormone; in vitro fertilisation; fertility; mutation; beta subunit; glycoprotein.

Homo sapiens.  
Key Location/Qualifiers  
Misc-difference 64 /note= "wild-type Phe at this position can be mutated to Asn to introduce a new N-glycosylation site; see claim 3."  
Misc-difference 79 /note= "wild-type Val at this position can be mutated to Asn to introduce a new N-glycosylation site; see claim 3."

US5864488-A.  
26-JAN-1999.  
24-FEB-1995; 95US-0395238.  
24-FEB-1994; 94GB-0003600.  
(UNIT ) UNIV GLASGOW.  
Grootenhuis PDJ, Harris DC, Isaacs NW, Laphorn AJ;  
WPI; 1999-131522/11.

Determining the 3-dimensional coordinates of chorionic gonadotropin and computer-assisted re-design of the chemical structure - used for production of gonadotropin hormone analogues

Examples: Fig 2: 60pp: English.  
The invention relates to determining whether an analogue of human chorionic gonadotropin (hCG) will have an altered three-dimensional (3D) structure as compared to hCG. Analogues of hCG and other glycoprotein hormones are produced by inputting chemical changes to the 3D structure into a computer loaded with 3D molecular simulation software and representing visually on a computer display. On inputting into the data input of the computer at least one operator change in chemical structure of the hCG molecule, the molecular simulation software produces a modified 3D molecular representation of the analogue structure. The 3D representation of the analogue can be displayed on the visual display, and the user can then determine the effect of the chemical changes on the 3D structure of the analogue. The 3D structure of the analogue can be compared to the 3D structure of hCG with additional glycosylation sites, and analogues with non-aspartic acid hairpins deleted can be produced by this method. The methods can be used to obtain analogues of hCG, follicle stimulating hormone, luteinising hormone, thyroid stimulating hormone, which may act as agonists or antagonists. The analogues can be used as growth factors in mammals, for in vitro fertilisation techniques and for treatment in vivo to enhance fertility. The present sequence represents the beta subunit of hCG. N-glycosylation sites can be introduced by single point mutations at specified positions to produce hCG analogues.

Sequence 145 AA:  
Query Match 99.1%; Score 770; DB 20; Length 145;  
Best Local Similarity 100.0%; Pred. No. 1.8e-62;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPTRVQLQVLPALPQWYR 61  
Db 1 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPTRVQLQVLPALPQWYR 60  
QY 62 DYRFESINLPGCPGPNVWYVAVLSCGALCRSTTDCGPKDHPFLTCDDPRQDS 121  
Db 61 DYRFESINLPGCPGPNVWYVAVLSCGALCRSTTDCGPKDHPFLTCDDPRQDS 120  
QY 122 SKAPPPSLPSRLPGPSDT 141

Db 121 SKAPPPSLPSRLPGPSDT 140  
RESULT 4  
RAB20558  
RAB20558 standard; protein; 145 AA.  
AC AAB20558;  
XX  
DT 11-DEC-2000 (first entry)  
XX Human chorionic gonadotropin beta subunit amino acid sequence.  
DE  
XX Human; chorionic gonadotropin antigen; follicle stimulating hormone; contraception; abortion; hormone related disease; carcinoma; cytostatic; contraceptive; antifertility; antihypertensive; antidiabetic; vaccine; fertility; cancer; hypertension; diabetes.  
XX Homo sapiens.  
OS  
XX US096318-A.  
XX 01-AUG-2000.  
XX 06-JUN-1995; 95US-0466445.  
XX 25-AUG-1978; 78US-0916876.  
XX 15-JUL-1987; 87US-0073748.  
XX 26-AUG-1992; 92US-0915331.  
XX 17-FEB-1989; 89US-0311331.  
XX 07-MAY-1989; 73US-0357892.  
XX 16-OCT-1973; 73US-0406821.  
XX 22-APR-1974; 74US-0462955.  
XX 14-OCT-1975; 75US-0622031.  
XX 16-JAN-1980; 80US-0112628.  
XX 18-MAY-1981; 81US-0357892.  
XX 18-MAY-1988; 88US-0360771.  
XX 02-NOV-1984; 84US-0667863.  
XX (OHIS ) UNIV OHIO STATE.  
XX Stevens VC;  
XX WPI; 2000-542298/49.  
XX New antigen for treating hormone related diseases, is conjugated with a specific polypeptide which elicits an antibody response against human chorionic gonadotropin  
XX  
XX Disclosure; Column 18; 61pp: English.  
XX The present invention describes an antigen (A) comprising a carrier chemically conjugated with a polypeptide (I) capable of eliciting antibody response to human chorionic gonadotropin (CG) and not to human luteinising hormone (LH), or a polypeptide (II) capable of eliciting antibody response to human CG. (A) has cytostatic, contraceptive, antifertility, antihypertensive and antidiabetic activities, and can be used as part of a vaccine. (A) is useful for contraception, abortion and CG treating hormone related diseases, for treating hormone related diseases e.g. viral proteins (A) is also useful in animal fertility control, for treating cancer, hypertension, diabetes and related vascular diseases. (A), safely and effectively controls various disease states or malades caused or influenced by unusual excesses of certain polypeptides such as gastrin, angiotensin II or somatomedin. It also provides an effective and safe method of terminating a pregnancy soon after conception which does not have serious harmful side effects.  
XX The present sequence represents the human CG beta subunit amino acid invention, which is given in the exemplification of the present

```

Query Match          99.1% Score 770; DB 21; Length 145;
Best Local Similarity 100.0%; Pred. No. 1.8e-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCTMTVLQGVLPALPQVQVCTR 61
DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCTMTVLQGVLPALPQVQVCTR 60
QY 62 DVRFESIRLPGCPGVNVPVSYAVALSOCALCRSTTDCGGKDPHPLTCDPRFQSSS 121
DB 61 DVRFESIRLPGCPGVNVPVSYAVALSOCALCRSTTDCGGKDPHPLTCDPRFQSSS 120
QY 122 SKAPPSLPSPSLRPGSDT 141
DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 5
AAU04619
ID AAU04619 standard; protein: 145 AA.
XX AC AAU04619;
XX XT (first entry)
XX DE Human chorionic gonadotropin (hCG) beta, amino acids 1-145.
XX KW Luteinising hormone; LH; follicle stimulating hormone; infertili-
XX KW thyrod stimulating hormone; TH.
XX OS Homo sapiens.
XX PN US6242580-B1.
XX PR 05-JUN-2001.
XX PF 31-MAR-1999; 99US-0282357.
XX PR 25-AUG-1997; 97US-0918288.
XX PR 18-FEB-1994; 94US-0199382.
XX PR 12-AUG-1994; 94US-0289396.
XX PR 22-SEP-1994; 94US-0310590.
XX PR 04-NOV-1994; 94US-0334628.
XX PR 07-DEC-1994; 94US-0351591.
XX PR 06-JUN-1995; 95US-0475049.
XX PR 09-MAY-1997; 97US-0853524.
XX PA (UNIM ) UNIV WASHINGTON.
XX PI Boime I, Moyle WR;
XX DR WPI; 2001-424301/45.
XX PT New single chain forms of the glycoprotein hormone quartet useful for
XX PT generating antibodies specifically immunoreactive with the new
XX PT compounds, in treating infertility, or as aids for in vivo
XX PT fertilization techniques.
XX PR Example 19; Column 34; 86pp; English.
XX CC The sequence represents the amino acid sequence of human chorionic
XX CC gonadotropin (hCG) beta, amino acids 1-145. The protein is an
XX CC important glycoprotein hormone heterodimer, along with luteinising
XX CC hormone (LH), follicle stimulating hormone (FSH), thyroid stimulating
XX CC hormone (TH), which all have identical alpha subunits but differing beta
XX CC subunits. The proteins are useful for generating antibodies specifically
XX CC immunoreactive with new compounds, as substitutes for the
XX CC heterodimeric forms of the hormones, in the treatment of infertility, as
XX CC aids for in vivo fertilisation techniques, and in other therapeutic
XX CC methods associated with the native hormones. The single chain proteins
XX CC are further useful as reagents in a manner similar to the heterodimers,

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as diagnostic tools to detect the presence of antibodies with respect to
the native proteins in the biological samples, as control reagents in
assay kits for assessing the levels of these hormones in various samples,
and in detecting and purifying receptors to which the native hormones
bind. The single chain forms of the heterodimers or homodimers have the
same antigenic determinants as the native hormones, and thus can be used
in the detection of antibodies to these hormones. The single chain forms
of the heterodimers or homodimers are reduced since only a single gene
is needed to transcribe, translate and process, provide an alternate form
thus permitting fine tuning of activity levels and of in vivo half lives.
Single chain forms are unique starting materials for identifying
truncated forms with the activity of the dimer. The linkage between the
subunits permits the protein to be engineered without disturbing the
overall folding of the protein.

Query Match          99.1% Score 770; DB 22; Length 145;
Best Local Similarity 100.0%; Pred. No. 1.8e-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCTMTVLQGVLPALPQVQVCTR 61
DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCTMTVLQGVLPALPQVQVCTR 60
QY 62 DVRFESIRLPGCPGVNVPVSYAVALSOCALCRSTTDCGGKDPHPLTCDPRFQSSS 121
DB 61 DVRFESIRLPGCPGVNVPVSYAVALSOCALCRSTTDCGGKDPHPLTCDPRFQSSS 120
QY 122 SKAPPSLPSPSLRPGSDT 141
DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 6
AAE04491
ID AAE04491 standard; protein: 145 AA.
XX AC AAE04491;
XX XT (first entry)
XX DE Human chorionic gonadotropin beta-subunit fragment (1-145 amino acids).
XX KW Human; single chain gonadotropin analog; anti-infertility; drug;
XX KW peptide therapy; luteinising hormone; LH; follicle stimulating hormone;
XX KW FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;
XX KW glycoprotein; infertility; fusion protein.
XX OS Homo sapiens.
XX PH Key Location/Qualifiers
XX FT Misc-difference 145
XX FT /note= "Residue 'O' is present at this location in the
XX FT sequence shown in column 33 of the specification"
XX PN US6238890-B1.
XX PR 29-MAY-2001.
XX PD 25-AUG-1997; 97US-0918288.
XX PR 18-FEB-1994; 94US-0199382.
XX PR 12-AUG-1994; 94US-0289396.
XX PR 22-SEP-1994; 94US-0310590.
XX PR 04-NOV-1994; 94US-0334628.
XX PR 07-DEC-1994; 94US-0351591.
XX PR 07-JUN-1995; 95US-0475049.
XX PR 09-MAY-1997; 97US-0853524.
XX PA (UNIM ) UNIV WASHINGTON.
XX PI Boime I, Moyle WR;
XX PT

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DR WPI; 2001-366474/38.  
XX New DNA or RNA encoding single chain protein useful in treating  
PT infertility, as aids in vitro fertilization techniques, or other  
PT therapeutic methods associated with the native hormones  
XX  
XX Example 19; Column 103-106; 87pp; English.  
XX  
XX The invention relates to human single chain forms of the glycoprotein  
CC hormone quartet which is an agonist or antagonist of luteinizing hormone  
CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone  
CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers  
CC having identical alpha subunits and differing beta subunits. The agonist  
CC forms of single chain hormones are used in treating infertility, as aids  
CC in vitro fertilization techniques, and other therapeutic methods  
CC as reagents in human assisted reproduction.  
CC The single chain hormones are useful  
CC as reagents in human assisted reproduction.  
CC detect the presence of antibodies with respect to the native proteins in  
CC biological samples, as control reagents in assay kits for assessing the  
CC levels of these hormones in various samples, in detecting and purifying  
CC receptors to which the native hormones bind. The single chain hormones  
CC are also used in affinity chromatographic preparation of receptors or  
CC antihormone antibodies. They are used as purification tools for  
CC isolation of subsequent preparations of these materials and to monitor  
CC levels of single chain hormones administered as drugs. The single chain  
CC hormones are used to generate antibodies specifically immunoreactive  
CC with these hormones. The present sequence is human chorionic gonadotropin beta  
CC subunit fragment (1-145 amino acids) which is used for constructing  
CC single chain gonadotropin analogs related to the invention. Analog  
CC fusion proteins serves as useful starting compounds for template directed  
CC vaccine design and for the development of hormone-specific vaccines for  
CC use in humans.  
XX  
XX Sequence 145 AA;  
S0  
Query Match 99.1%; Score 770; DB 22; Length 145;  
Best Local Similarity 100.0%; Pred. No. 1.8e-62;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKEGCPVCTVTNTTICAGYCPPTMTRVLGVLPAIPVQVNCNR 61  
DB 1 SKEPLRPRCPINATLAVKEGCPVCTVTNTTICAGYCPPTMTRVLGVLPAIPVQVNCNR 60  
QY 62 DVRFESIRLPGCPGPNVWVSVAVALSCQALCRSTTDCGPKDHPITCDDPRFQDSSS 121  
DB 61 DVRFESIRLPGCPGPNVWVSVAVALSCQALCRSTTDCGPKDHPITCDDPRFQDSSS 120  
QY 122 SKAPPSLPSPSLRPGSDT 141  
DB 121 SKAPPSLPSPSLRPGSDT 140  
RESULT 7  
AAU00709  
ID AAU00709 standard; Protein; 145 AA.  
XX  
XX AAU00709;  
XX  
XX 07-SEP-2001 (first entry)  
XX  
XX Beta-subunit of Human Chorionic Gonadotropin (HCG).  
XX  
XX Human chorionic gonadotropin beta-subunit; HCG; mammal; pregnancy test;  
KW human pituitary luteinizing hormone; reduced fertility; infertility;  
KW contraception; abortion; hormone-associated carcinoma.  
XX  
XX Homo sapiens.  
XX  
XX W0200124765-A2.  
XX  
XX 12-APR-2001.  
XX

PF 06-OCT-2000; 2000MO-US27741.  
XX  
XX 06-OCT-1999; 99US-0413564.  
XX  
XX (OHIS ) UNIV OHIO STATE RES FOUND.  
XX  
XX Stevens VC;  
XX  
XX WPI; 2001-328306/34.  
XX  
XX Peptide analogues of beta-human chorionic gonadotropin which are able to  
PT raise antibodies against human chorionic gonadotropin are used in  
PT vaccines as contraceptives and/or abortifacients -  
XX  
XX Claim 1; Page 35; 214pp; English.  
XX  
XX The sequence represents the beta-subunit of human chorionic gonadotropin  
CC (hCG). The sequence is a peptide analog of the amino acid residues 38-57 of beta-hCG  
CC (beta-hCG). The peptide analogues of the amino acid residues 38 and 57  
CC to form a loop structure. The peptides are used in vaccines to raise  
CC antibodies against hCG with a significant decrease in antibodies reactive  
CC to human pituitary luteinizing hormone, to control the biological  
CC activity of endogenous hCG. These antibodies may be used in diagnostic  
CC tests to determine hormone levels of mammals. The peptides can be used in  
CC pregnancy tests and in detection of reduced fertility or infertility.  
CC They may also be administered for contraception or abortion processes.  
CC Upon conjugation to a foreign carrier, the peptides may be administered  
CC to humans to treat hormone associated carcinomas.  
XX  
XX Sequence 145 AA;  
S0  
Query Match 99.1%; Score 770; DB 22; Length 145;  
Best Local Similarity 100.0%; Pred. No. 1.8e-62;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKEGCPVCTVTNTTICAGYCPPTMTRVLGVLPAIPVQVNCNR 61  
DB 1 SKEPLRPRCPINATLAVKEGCPVCTVTNTTICAGYCPPTMTRVLGVLPAIPVQVNCNR 60  
QY 62 DVRFESIRLPGCPGPNVWVSVAVALSCQALCRSTTDCGPKDHPITCDDPRFQDSSS 121  
DB 61 DVRFESIRLPGCPGPNVWVSVAVALSCQALCRSTTDCGPKDHPITCDDPRFQDSSS 120  
QY 122 SKAPPSLPSPSLRPGSDT 141  
DB 121 SKAPPSLPSPSLRPGSDT 140  
RESULT 8  
AAU01139  
ID AAU01139 standard; protein; 145 AA.  
XX  
XX AAU01139;  
XX  
XX 29-AUG-2001 (first entry)  
XX  
XX Human chorionic gonadotropin (HCG) beta-subunit (Structure 1).  
XX  
XX Human chorionic gonadotropin; HCG; contraception; abortion;  
KW hormone-related disorder; hormone-associated carcinoma; cancer; diabetes;  
KW vascular disease; Zollinger-Ellison syndrome; chronic digestive disorder;  
KW antigenic modification.  
XX  
XX Homo sapiens.  
XX  
XX US6217881-B1.  
XX  
XX 17-APR-2001.  
XX  
XX 06-JUN-1995; 95US-0467997.  
XX  
XX 06-OCT-1992; 92US-0958601.  
XX  
XX 07-AUG-1992; 92US-0390530.  
PR

PR 04-DEC-1985; 85US-0804642.  
XX 17-AUG-1987; 87US-0086401.  
PA (OHIS ) UNIV OHIO STATE RES FOUND.  
XX Stevens VC;  
XX WPI: 2001-289819/30.  
XX Novel vaccine composition for provoking the formation of antibodies to  
XX human chorionic gonadotropin. Contains a peptide comprising disulfide  
XX bridges linking terminal cysteine residues to form a loop.  
XX Disclosure: Column 19; 82pp; English.

CC The present sequence represents the beta-subunit of human chorionic  
CC gonadotropin (HCG). The HCG beta-subunit polypeptide sequence is  
CC used to isolate 3 novel HCG antigenic peptides (AA001175-AA001177)  
CC with a disulfide bridge linking the terminal cysteine amino acids  
CC to form a loop. These peptides are used to elicit an antigenic  
CC response to HCG in a mammal. The novel HCG antigenic  
CC peptides are useful for the purpose of contraception, abortion,  
CC and for the treatment of hormone-related disease states and  
CC disorders. Treatment of hormone-associated carcinomas, and to boost an  
CC animal's resistance to exogenous proteins, such as viral proteins. The  
CC HCG antigenic peptides are also useful for treating cancer, diabetes,  
CC vascular disease, hypertension, Zollinger-Ellison syndrome, and  
CC cancer. The peptides AA001175-AA001177 are novel structures  
CC which can be synthetically modified to make them more strongly antigenic,  
CC thereby provoking the formation of relatively large quantities of  
CC antibodies to the non-endogenous materials in the body of the animals,  
CC with consequent reduced risk of damage to the immune system, if exposed  
CC to non-endogenous materials.

XX  
SQ Sequence 145 AA;  
Query Match 99.1%; Score 770; DB 22; Length 145;  
Best Local Similarity 100.0%; Fract. No. 1.8e-62;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEREGCPVCITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 61  
DB 1 SKEPLRPRCPINATLAVEREGCPVCITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 60  
OY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPDLPDPRFQDSSS 121  
DB 61 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPDLPDPRFQDSSS 120  
OY 122 SKAPPSLPSPSLRCPGSDT 141  
DB 121 SKAPPSLPSPSLRCPGSDT 140

RESULT 9  
AAB71765  
ID AAB71765 standard; protein; 145 AA.  
XX AAB71765;  
XX  
XX  
DT 02-MAY-2001 (first entry)  
DE Beta-human chorionic gonadotropin.  
XX Beta-human chorionic gonadotropin; beta-HCG; anti-HIV; cytostatic;  
XX antianemic; vascular; osteopathic; antiinflammatory; gene therapy;  
XX matrinin; MA peptide; pMA peptide; human immunodeficiency virus;  
XX HIV; cancer; wasting disorder; haematopoietic disorder; inflammation;  
XX angiogenic disorder.  
XX Homo sapiens.  
XX

PN WC200110907-A2.  
XX 15-FEB-2001.  
XX 05-AUG-2000; 2000WO-US21495.  
XX 06-AUG-1999; 98US-0147825.  
XX 13-MAR-2000; 2000US-0188777.  
XX (UYMA-) UNIV MARYLAND BIOTECHNOLOGY INST.  
XX Gallo R, Bryant J, Lunardi-Iskandar Y, Powell R, Reitz M;  
XX Foulke J, Lewis G;  
XX WPI: 2001-147510/15.

CC Cells that produce therapeutic beta-human chorionic gonadotropin  
CC fragments, useful for the treatment of human immunodeficiency virus  
CC infections, cancers, wasting disorders, hematopoietic disorders,  
CC inflammation and angiogenic disorders.  
XX  
PS Claim 1: Page 24; 185pp; English.

CC The present sequence is given in a specification relating to  
CC therapeutic polypeptides originally isolated from human early pregnancy  
CC urine, now synthetically produced, as well as functional equivalents of  
CC these polypeptides. Novel beta-human chorionic gonadotropin (HCG)  
CC fragments, designated Maternin (RM) and referred to as MA and pMA  
CC peptides, are disclosed. Both native and synthetic MA inhibited growth  
CC to 100% relative to the control. The peptides MA and pMA are used  
CC may be used for the prevention and treatment of a range of diseases and  
CC disorders, including human immunodeficiency virus (HIV) infections,  
CC cancers (especially Kaposi's sarcoma), wasting disorders, haematopoietic  
CC disorders (e.g. anemias, radiation mediated bone marrow damage and  
CC trauma related blood loss), inflammation and angiogenic disorders.

XX  
SQ Sequence 145 AA;  
Query Match 99.1%; Score 770; DB 22; Length 145;  
Best Local Similarity 100.0%; Fract. No. 1.8e-62;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEREGCPVCITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 61  
DB 1 SKEPLRPRCPINATLAVEREGCPVCITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 60  
OY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPDLPDPRFQDSSS 121  
DB 61 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPDLPDPRFQDSSS 120  
OY 122 SKAPPSLPSPSLRCPGSDT 141  
DB 121 SKAPPSLPSPSLRCPGSDT 140

RESULT 10  
AAB04121  
ID AAB04121 standard; protein; 145 AA.  
XX AAB04121;  
XX  
XX  
DT 11-APR-2001 (first entry)  
DE Beta subunit of human chorionic gonadotropin (HCG).  
XX Human chorionic gonadotropin; HCG; polyclonal antibody; Ab;  
XX vaccine; contraception; abortion; hormone; therapy; treatment;  
XX disease; carcinoma; immune response; steroid; human.  
XX Homo sapiens.  
XX  
XX US6146633-A.



PH	Key	Location/Qualifiers
FT	Peptide	1..20
FT	Peptide	/label= signal sequence
XX		
PN	W09116922-A.	
XX		
PD	14-NOV-1991.	
XX		
PF	07-MAY-1991;	91WO-US031162.
XX		
PR	08-MAY-1990;	90US-0520703.
XX		
PA	(UYNE-) UNIV MED NEW JERSEY.	
XX		
XX	Campbell RK, Moyle WR;	
XX		
DR	WPI: 1991-351528/48.	
XX		
DR	N-PSDB: AAQ14800.	
XX		
XX	New glyco-protein hormone analogues - for inducing fertility as	
PT	immuno-castration agents, for suppressing reproductive system	
PT	development and as immuno-contragestive vaccines.	
XX		
XX	Example 3; Fig 4a; 94pp; English.	
XX		
PS	The sequence is encoded by an analogue of hCG beta subunit cDNA contg.	
XX	two silent mutations which eliminate restriction sites. It was prepd.	
CC	from the plasmid pKM-bcg-beta, a construct contg the hCG beta	
CC	subunit isolated from human placenta (Fiddes and Goodman) in	
CC	plasmid pKMb, a derivative of pUC18 designed to facilitate cloning	
CC	of glycoprotein hormones. The sequence was used as the starting	
CC	construct for many mutants. (See AAR15061-R15125 and AAR15161-R15198).	
XX		
XX	Sequence 165 AA:	
XX		
Query Match	99.14; Score 770; DB 12; Length 165;	
Matches Local Similarity	100.04; Pred. No. 24-62;	
Matches 140; Conservative	0; Mismatches 0; Indels 0; Gaps	
QY	2	SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGVCPPTNRVLSQVLPALPQVNCNR 61
DB	21	SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGVCPPTNRVLSQVLPALPQVNCNR 80
QY	62	DYRFESIRLPGCPGVNPNVYSVAVALSCQALCRSRSTDCGGPKDHPILTCDDPRFQDSSS 121
DB	81	DYRFESIRLPGCPGVNPNVYSVAVALSCQALCRSRSTDCGGPKDHPILTCDDPRFQDSSS 140
QY	122	SKAPPPSLPSRLPGFSST 141
DB	141	SKAPPPSLPSRLPGFSST 160
XX		
RESULT 12		
AAV05748		
ID	AAV05748 standard; Protein: 165 AA.	
XX		
AC	AAV05748;	
XX		
DT	19-JUL-1999 (first entry)	
XX		
XX	Human chorionic gonadotropin.	
KW	Human chorionic gonadotropin; hCG; thyroid stimulating hormone;	
KW	TSH; thyroid cancer; hypothyroidism; Graves' disease; prognosis;	
KW	diagnosis; therapy.	
OS	/note= "mature protein"	
XX		
XX	Homo sapiens.	
XX		
Key	Location/Qualifiers	
FT	Peptide	1..20
FT	Peptide	/note= "signal peptide"
FT	Protein	21..165
FT	Protein	

FT Peptide 134..165  
 FT /note= "C-terminal extension peptide"  
 XX W0915665-A2.  
 XX 01-APR-1999.  
 XX 22-SEP-1998: 98WO-US19772.  
 XX 22-SEP-1997: 97US-0939472.  
 XX (DYMA-) UNIV MARYLAND BALTIMORE.  
 XX Szkludinski MW, Weintraub BD;  
 XX WPI: 1999-354714/21.  
 XX N-PSDB; AAM25387.  
 XX New thyroid stimulating hormone mutants with increased bioactivity  
 XX Disclosure: Fig 3: 44pp; English.  
 XX The present sequence represents human chorionic gonadotropin  
 CC (HCG). The invention is based upon the discovery that mutant  
 CC human glycoprotein hormone common alpha subunit (see AAY05746)  
 CC and mutant human thyroid stimulating hormone (TSH) beta subunit  
 CC (see AAY05747), each comprising amino acid substitutions relative to  
 CC the wild-type sequences, can be produced and assembled to form  
 CC mutant TSH heterodimers, or heterodimers, that have bioactivity  
 CC in vitro and longer half life in vivo than wild-type heterodimers.  
 CC In one embodiment, a mutant TSH heterodimer comprises the TSH beta  
 CC subunit joined via a peptide bond at its C-terminus to the  
 CC N-terminus of the C-terminal extension peptide of HCG, and an  
 CC alpha subunit. The new mutant TSH heterodimers and analogues are  
 CC used in claimed methods of treating or preventing hypothyroidism,  
 CC treating or diagnosing thyroid cancer, and diagnosing or screening  
 CC for a disease or disorder characterised by the presence of  
 CC antibodies against TSH receptor, such as Graves' disease. The TSH  
 CC heterodimers and analogues are used in the detection of  
 CC therapeutics to the thyroid or to thyroid cancer cells.  
 XX Sequence 165 AA:  
 XX  
 XX Query Match 99.1%; Score 770; DB 20; Length 165;  
 XX Best Local Similarity 100.0%; Pred. No. 2e-62;  
 XX Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVREKCPVCITVNTTICAGCTPTMTRVGLQVLPALPQVVCNTR 61  
 DB 21 SKEPLRPRCPINATLAVREKCPVCITVNTTICAGCTPTMTRVGLQVLPALPQVVCNTR 80  
 QY 62 DVRFESIRLPCPGVNPVSYVALSCCALCRSTTDCGGPKDHPCLTCDPRPDSSS 121  
 DB 81 DVRFESIRLPCPGVNPVSYVALSCCALCRSTTDCGGPKDHPCLTCDPRPDSSS 140  
 QY 122 SKAPPPSLPSPRLPGPSDT 141  
 DB 141 SKAPPPSLPSPRLPGPSDT 160  
 RESULT 13  
 AAW95533  
 ID AAW95533 standard; Protein: 165 AA.  
 XX  
 XX AAW95533;  
 XX  
 XX 08-JUN-1999 (first entry)  
 XX Human chorionic gonadotropin beta subunit hCG-beta'.  
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 XX human follicle stimulating hormone; human thyroid stimulating hormone;

XX stability; primer; amplification; PCR; mutation.  
 XX Homo sapiens.  
 XX W09858957-A2.  
 XX 30-DEC-1998.  
 XX 25-JUN-1998: 98WO-US13070.  
 XX 25-JUN-1997: 97US-0050784.  
 XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 XX (MCIN-) MCINNIS P G.  
 XX Moyle WR;  
 XX WPI: 1999-081219/07.  
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 XX or hTSH, have an intersubunit disulphide crosslink between the  
 XX alpha- and beta-subunits to improve stability  
 XX Disclosure: Fig 4A; 139pp; English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating  
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and analogues  
 CC thereof, which are modified to contain an intersubunit disulphide bond,  
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 CC improved stability, the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents the wild type hCG-beta subunit used for the generation of  
 CC the modified GPHs. The improved analogues are designed specifically  
 CC to reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer will have affinity for the native receptors and have  
 CC comparable biological activities to the native hormone analogues.  
 CC The biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX Sequence 165 AA:  
 XX  
 XX Query Match 99.1%; Score 770; DB 20; Length 165;  
 XX Best Local Similarity 100.0%; Pred. No. 2e-62;  
 XX Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVREKCPVCITVNTTICAGCTPTMTRVGLQVLPALPQVVCNTR 61  
 DB 21 SKEPLRPRCPINATLAVREKCPVCITVNTTICAGCTPTMTRVGLQVLPALPQVVCNTR 80  
 QY 62 DVRFESIRLPCPGVNPVSYVALSCCALCRSTTDCGGPKDHPCLTCDPRPDSSS 121  
 DB 81 DVRFESIRLPCPGVNPVSYVALSCCALCRSTTDCGGPKDHPCLTCDPRPDSSS 140  
 QY 122 SKAPPPSLPSPRLPGPSDT 141  
 DB 141 SKAPPPSLPSPRLPGPSDT 160  
 RESULT 14  
 AAB15358  
 ID AAB15358 standard; protein: 165 AA.  
 XX  
 XX AAB15358;  
 XX  
 XX 15-FEB-2001 (first entry)  
 XX Human chorionic gonadotropin beta-subunit.  
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 XX human follicle stimulating hormone; human thyroid stimulating hormone;

```
XX OS Homo sapiens.
XX PN WO200041717-A2.
XX PD 20-JUL-2000.
XX PF 17-DEC-1999; 99WO-US30232.
XX PR 18-DEC-1998; 98US-0112910.
XX PA (AVTB-) AVI BIOPHARMA INC.
XX PI Iversen PL;
XX MPI: 2000-456124/40.
XX N-PSDB; AAA73833.
XX Inducing immune response to human chorionic gonadotropin (hCG), useful
XX for treatment of cancer and fertility control comprises exposing cells
XX to nucleic acid construct encoding hCG immunogenic epitope.
XX Claim 25; Fig 1A; 45pp; English.
XX The present sequence comprises the human chorionic gonadotropin (hCG)
XX beta-subunit. Fragments of the present sequence are used as antigens
XX to induce an immune response and enable the treatment of cancer and
XX provide a novel method of fertility control. In particular, they can be
XX used to treat colorectal, breast and lung cancer, as hCG is associated
XX with these types of tumours.
XX Sequence 165 AA:
Query Match 99.1%; Score 770; DB 21; Length 165;
Best Local Similarity 100.0%; Pred. No. 28-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRRCRPNATLAVKEGCPVCITVTNTTICAGYCTMTVRVQLQVLPALPQVVCNR 61
DB 1 SKEPLRRCRPNATLAVKEGCPVCITVTNTTICAGYCTMTVRVQLQVLPALPQVVCNR 80
QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCCLCRSTTDCGGPKDHPDLTCDPRFDSSS 121
DB 81 DVRFESIRLPGCPGVNPNVSYAVALSQCCLCRSTTDCGGPKDHPDLTCDPRFDSSS 140
QY 122 SKAPPSLPSPRLPGSDT 141
DB 141 SKAPPSLPSPRLPGSDT 160
RESULT 15
ID AAB49896
XX AAB49896 standard; protein; 165 AA.
XX AAB49896;
XX 06-MAR-2001 (first entry)
XX Human chorionic gonadotropin hCG.
XX Human chorionic gonadotropin; hCG; cancer; vaccine;
XX immunogenic epitope.
XX Homo sapiens.
XX WO200069915-A2.
XX 23-NOV-2000.
XX 15-MAY-2000; 2000WO-US13392.
XX 17-MAY-1999; 99US-0134419.
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PR 17-MAY-1999; 99US-0134432.
XX (AVTB-) AVI BIOPHARMA INC.
XX Iversen PL;
XX MPI: 2001-025010/03.
XX Human, anti-human chorionic gonadotropin (hCG) monoclonal antibody
XX immunoreactive with a 2imer N-terminal fragment of C-terminal 37
XX subunits of hCG beta subunit, used to treat cancer along with vaccine
XX comprising hCG groups -
XX Disclosure; Fig 1; 40pp; English.
XX The present invention provides the sequences of several immunogenic
XX epitopes and antibodies to human chorionic gonadotropin (hCG). These can
XX be used in the treatment of cancers where hCG synthesis occurs, including
XX bladder, pancreatic, cervical, colorectal, lung, oesophageal, breast,
XX gastric, prostate, ovarian, uterine and endometrial cancers.
XX Sequence 165 AA:
Query Match 99.1%; Score 770; DB 22; Length 165;
Best Local Similarity 100.0%; Pred. No. 28-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRRCRPNATLAVKEGCPVCITVTNTTICAGYCTMTVRVQLQVLPALPQVVCNR 61
DB 21 SKEPLRRCRPNATLAVKEGCPVCITVTNTTICAGYCTMTVRVQLQVLPALPQVVCNR 80
QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCCLCRSTTDCGGPKDHPDLTCDPRFDSSS 121
DB 81 DVRFESIRLPGCPGVNPNVSYAVALSQCCLCRSTTDCGGPKDHPDLTCDPRFDSSS 140
QY 122 SKAPPSLPSPRLPGSDT 141
DB 141 SKAPPSLPSPRLPGSDT 160
RESULT 16
ID AAY43298
XX AAY43298 standard; protein; 203 AA.
XX AAY43298;
XX 19-JAN-2000 (first entry)
XX HCG beta subunit-Jun fusion protein sequence.
XX Cysteine knot protein; protein formation; heterodimeric protein analog;
XX desglycosylated glycoprotein hormone; infertility; immunogen; antigen;
XX polycystic ovarian disease; hCG; human; chorionic gonadotropin;
XX beta subunit; therapy; Jun.
XX Homo sapiens.
XX OS Synthetic.
XX WO9953065-A1.
XX 21-OCT-1999.
XX 13-APR-1999; 99WO-US08018.
XX 14-APR-1998; 98US-0059625.
XX (UYNE-) UNIV NEW JERSEY.
XX Moyle WR;
XX MPI: 1999-620431/53.
XX Methods for producing heterodimers, particularly analogues of hormones,
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**Example 7: Fig 20; 73pp; English.**

AA	Sequence	203 AA:
SQ		

QY	2	SKEPLPRCPBPINATLAVEKSGCCPVCITVNTITICAGYCFPTMRVLQGVLDALPQVCNTR	61
DB	21	SKEPLPRCPBPINATLAVEKSGCCPVCITVNTITICAGYCFPTMRVLQGVLDALPQVCNTR	80
QY	62	DVRFESTRLPCCPGRGVNPVSYAVALSOCALCRNSTDCGGFKDHPILTCDDPQFODSSS	121
DB	81	DVRFESTRLPCCPGRGVNPVSYAVALSOCALCRNSTDCGGFKDHPILTCDDPQFODSSS	140
QY	122	SKAPPSPSLPSRSLRPGPST	141
DB	141	SKAPPSPSLPSRSLRPGPST	160

AA43303  
ID AA43303 standard: Protein: 206 AA.

XX  
DT 19-JAN-2000 (first entry)

XX	Cysteine knot protein; protein formation; heterodimeric protein analog;
KW	desglycosylated glycoprotein hormone; infertility; immunogen; antigen;
KW	polycystic ovarian disease; hCG; human; chorionic gonadotrophin;
KW	beta subunit; therapy; Jun.

OS  
XX

PD 21-OCT-1999.  
XX

PR 14-APR-1998; 98US-0059625.  
XX

PI Moyle WR;  
XX

## Methods for producing heterodimer

ix	Sequence	206 AA;
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Best Local Similarity 100.00; Pred. NO. 2.5e-62;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

21 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTTRVLQGLPALPQVVCNYR 80

81 DVRFESIRLPGCPGVNPVYSYAVALSQCQALCRRSTTDCGGPKDHLTCDDPRFQDSSS 140

b 141 SKAPPSLSPSRLPGPST 160

AAI43299  
D AAY43

19-JAN-1964

Cysteine knot protein; protein formation; het-

beta subunit; therapy; Jun.

W09953065-A1.

13-APR-1999;

(UYNE-) UNIV NEW JERSEY.

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XX Moyle WR;
XX WPI: 1999-620431/53.
XX Methods for producing heterodimers, particularly analogues of hormones,
XX from subunits of cysteine knot proteins.
XX Example 7; Fig 20; 73pp; English.
XX This sequence is a fusion protein of HCG and Jun. The invention
XX relates to a method of forming a cysteine knot protein (I) having alpha
XX and beta subunits comprising attaching a dimerisation domain (DD) to
XX either the N-termini of both subunits or the N-terminus of the
XX alpha subunit and to the C-terminus of the beta subunit and dimerising
XX the products to form a heterodimeric protein analog (II). The method is
XX used to produce heterodimeric protein analogs of deglycosylated
XX glycoprotein hormones, potentially useful for treating infertility
XX where caused by polycystic ovarian disease (associated with excessive
XX levels of luteinising hormone). Products that retain DD's are also useful
XX as immunogens or antigens (since a DD may contain highly antigenic
XX amino acid sequences). Attachment of a DD (which may be removed later)
XX facilitates the formation of heterodimers, that have similar structures
XX (and thus receptor-binding and immunogenic properties) to native dimers,
XX and allows the combination of subunits that would otherwise combine
XX poorly, or not at all. The N-terminal part of a glycoprotein hormone may
XX be modified without loss of activity, and attachment of the DD reduces
XX formation of homodimers. Heterodimers have longer circulation times in
XX vivo than individual subunits.
XX Sequence 209 AA:
Query Match 99.1%; Score 770; DB 20; Length 209;
Best Local Similarity 100.0%; Pred. No. 2.6e-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLPRCPINATLAVKEGCPVCTVTNTTCAGTCPTMTVRVLOGVLPALPQVVCNVR 61
DB 21 SKEPLPRCPINATLAVKEGCPVCTVTNTTCAGTCPTMTVRVLOGVLPALPQVVCNVR 80
QY 62 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGPKDHPDLTCDPFRQDSSS 121
DB 81 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGPKDHPDLTCDPFRQDSSS 140
QY 122 SKAPPSLPSPRLPGPSDT 141
DB 141 SKAPPSLPSPRLPGPSDT 160
RESULT 19
AAY43278
ID AAY43278 standard; Protein; 212 AA.
XX AAY43278;
XX 19-JAN-2000 (first entry)
XX Human CG beta subunit-Jun fusion protein sequence.
XX Cysteine knot protein; protein formation; heterodimeric protein analog;
XX deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
XX polycystic ovarian disease; HCG; human; chorionic gonadotrophin;
XX beta subunit; therapy; Jun.
XX Homo sapiens.
XX Synthetic.
XX WO953065-A1.
XX 21-OCT-1999.
XX 13-APR-1999; 99WO-US08018.
XX

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PR 14-APR-1998; 98US-0059625.
XX (UYNE-) UNIV NEW JERSEY.
XX Moyle WR;
XX WPI: 1999-620431/53.
XX Methods for producing heterodimers, particularly analogues of hormones,
XX from subunits of cysteine knot proteins.
XX Example 4; Fig 17; 73pp; English.
XX This sequence represents a fusion protein of the human chorionic
XX gonadotrophin (HCG) beta subunit and Jun. The invention relates to a
XX method of forming a cysteine knot protein (I) having alpha and
XX beta subunits comprising attaching a dimerisation domain (DD) to either
XX the N-termini of both subunits or the N-terminus of the alpha subunit and
XX the C-terminus of the beta subunit and dimerising the products to form
XX a heterodimeric protein analog (II). The method is used to produce
XX analogues (agonists or antagonists) of deglycosylated glycoprotein
XX hormones, potentially useful, e.g. for treating infertility where caused
XX by polycystic ovarian disease (associated with excessive levels of
XX luteinising hormone). Products that retain DD's are also useful as
XX immunogens or antigens (since a DD may contain highly antigenic amino
XX acid sequences). Attachment of a DD (which may be removed later)
XX facilitates the formation of heterodimers, that have similar structures
XX (and thus receptor-binding and immunogenic properties) to native dimers,
XX and allows the combination of subunits that would otherwise combine
XX poorly, or not at all. The N-terminal part of a glycoprotein hormone may
XX be modified without loss of activity, and attachment of the DD reduces
XX formation of homodimers. Heterodimers have longer circulation times in
XX vivo than individual subunits.
XX Sequence 212 AA:
Query Match 99.1%; Score 770; DB 20; Length 212;
Best Local Similarity 100.0%; Pred. No. 2.6e-62;
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLPRCPINATLAVKEGCPVCTVTNTTCAGTCPTMTVRVLOGVLPALPQVVCNVR 61
DB 68 SKEPLPRCPINATLAVKEGCPVCTVTNTTCAGTCPTMTVRVLOGVLPALPQVVCNVR 127
QY 62 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGPKDHPDLTCDPFRQDSSS 121
DB 128 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGPKDHPDLTCDPFRQDSSS 187
QY 122 SKAPPSLPSPRLPGPSDT 141
DB 188 SKAPPSLPSPRLPGPSDT 207
RESULT 20
AAY43304
ID AAY43304 standard; Protein; 212 AA.
XX AAY43304;
XX 19-JAN-2000 (first entry)
XX HCG beta subunit-Jun fusion protein sequence.
XX Cysteine knot protein; protein formation; heterodimeric protein analog;
XX deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
XX polycystic ovarian disease; HCG; human; chorionic gonadotrophin;
XX beta subunit; therapy; Jun.
XX Homo sapiens.
XX Synthetic.
XX WO953065-A1.
XX

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PD XX 21-OCT-1999.
PF XX 13-APR-1999; 99WO-US08018.
PR XX 14-APR-1998; 98US-0059625.
PA XX (UYNE-) UNIV NEW JERSEY.
PI XX Moyle WR;
XX XX WPI: 1999-620431/53.
XX XX Methods for producing heterodimers, particularly analogues of hormones,
PT from subunits of cysteine knot proteins.
XX XX Example 7; Fig 20; 73pp; English.
XX XX This sequence is a fusion protein of HCG and Jun. The invention
CC relates to method of forming a heterodimeric protein (I) having alpha
CC and beta subunits comprising attaching a heterodimeric protein (II) to
CC either the N-termini of both subunits or the C-termini of the
CC alpha-subunit and to the C-terminus of the beta-subunit and dimerising
CC the products to form a heterodimeric protein analog (II). The method is
CC used to produce analogues (agonists or antagonists) of deglycosylated
CC glycoprotein hormones, potentially useful, e.g. for treating infertility
CC where caused by polycystic ovarian disease (associated with excessive
CC levels of luteinizing hormone). Products that retain DO's are also useful
CC as immunogens or antigens (since a DO may contain highly antigenic
CC epitopes). The heterodimeric protein (I) which may be removed later
CC facilitates the formation of heterodimeric proteins (II) to native dimers,
CC and thus receptor-binding and immunogenic properties) to native dimers,
CC and allows the combination of subunits that would otherwise combine
CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may
CC be modified without loss of activity, and attachment of the DO reduces
CC formation of homodimers. Heterodimers have longer circulation times in
CC vivo than individual subunits.
XX XX Sequence 212 AA;
XX XX Query Match 99.18; Score 770; DB 20; Length 212;
XX XX Best Local Similarity 100.0%; Pred. No. 2,66-62;
XX XX Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMTVRVLQGLPALPQVCHYR 61
DB 21 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMTVRVLQGLPALPQVCHYR 80
QY 62 DYRFESIRLPGCPGPNVPSYAVALSQCQALCRRTTDCGGPKDHPDLCDDPRFQDSSS 121
DB 81 DYRFESIRLPGCPGPNVPSYAVALSQCQALCRRTTDCGGPKDHPDLCDDPRFQDSSS 140
QY 122 SKAPPSLPSPSLPGPSDT 141
DB 141 SKAPPSLPSPSLPGPSDT 160
XX XX RESULT 21
XX XX ID AAU04602 standard; Protein: 265 AA.
XX XX AAU04602;
XX XX 23-OCT-2001 (first entry)
XX XX Single chain gonadotropin analogue #1.
XX XX Human; glycoprotein hormone; infertility; in vivo fertilisation;
XX XX single chain gonadotropin.
XX XX Homo sapiens.
XX XX US6242580-B1.
XX XX

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PD XX 05-JUN-2001.
PF XX 31-MAR-1999; 99US-0382357.
PR XX 25-AUG-1997; 97US-0918288.
PA XX 18-FEB-1994; 94US-0199382.
PI XX 12-AUG-1994; 94US-0289396.
XX XX 22-SEP-1994; 94US-0310590.
XX XX 04-NOV-1994; 94US-0351481.
XX XX 07-DEC-1994; 94US-0351591.
XX XX 07-JUN-1995; 95US-0475049.
XX XX 09-MAY-1997; 97US-0853524.
XX XX (UNIW ) UNIV WASHINGTON.
XX XX Boime I, Moyle WR;
XX XX WPI: 2001-424301/45.
XX XX N-PSDB; AAS08485.
XX XX New single chain forms of the glycoprotein hormone quartet useful for
PT generating antibodies specifically immunoreactive with the new
PT compounds, in treating infertility, or as aids for in vivo
PT fertilization techniques.
XX XX Example 5; Fig 5; 86pp; English.
XX XX The sequence represents the amino acid sequence of single chain
CC gonadotropin analogue #1. The glycoprotein hormone analogue is
CC superior generating antibodies specifically immunoreactive with new
CC compounds, in treating infertility, as an aid for in vivo fertilisation,
CC in the treatment of infertility, as an aid for in vivo fertilisation,
CC techniques, and in other therapeutic methods associated with the native
CC hormone. The single chain protein is further useful as a reagent in a
CC manner similar to the heterodimer, as a diagnostic tool to detect the
CC presence of antibodies with respect to the native proteins in the
CC biological samples, as a control reagent in assay kits for assessing the
CC levels of these hormones in various samples, and in detecting and
CC purifying receptors to which the native hormones bind. The single chain
CC forms of the heterodimers or homodimers have the following advantages
CC over the native forms: they are more stable, prolonged to treatment
CC production and process, provide an alternate form thus permitting fine
CC tune of activity levels and of in vivo half lives. Single chain forms
CC are unique starting materials for identifying truncated forms with the
CC activity of the dimer. The linkage between the subunits permits the
CC protein to be engineered without disturbing the overall folding of the
XX XX protein.
XX XX Sequence 265 AA;
XX XX Query Match 99.18; Score 770; DB 22; Length 265;
XX XX Best Local Similarity 100.0%; Pred. No. 3,3e-62;
XX XX Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMTVRVLQGLPALPQVCHYR 61
DB 21 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMTVRVLQGLPALPQVCHYR 80
QY 62 DYRFESIRLPGCPGPNVPSYAVALSQCQALCRRTTDCGGPKDHPDLCDDPRFQDSSS 121
DB 81 DYRFESIRLPGCPGPNVPSYAVALSQCQALCRRTTDCGGPKDHPDLCDDPRFQDSSS 140
QY 122 SKAPPSLPSPSLPGPSDT 141
DB 141 SKAPPSLPSPSLPGPSDT 160
XX XX RESULT 22
XX XX ID AAU04614 standard; Protein: 265 AA.
XX XX AAU04614;
XX XX

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XX 23-OCT-2001 (first entry)  
 DT Single chain gonadotropin analogue #1a.  
 DE Human; glycoprotein hormone; infertile; in vivo fertilisation;  
 KW single chain gonadotropin.  
 XX Homo sapiens.  
 OS US6242580-BI.  
 PN 05-JUN-2001.  
 PD 31-MAR-1999; 99US-0282357.  
 PF 25-AUG-1997; 97US-0918288.  
 PR 18-FEB-1994; 94US-0199382.  
 PR 12-AUG-1994; 94US-0289396.  
 PR 22-SEP-1994; 94US-0310590.  
 PR 04-NOV-1994; 94US-0334628.  
 PR 07-DEC-1994; 94US-0351591.  
 PR 07-JUN-1995; 95US-0475049.  
 PR 05-MAY-1997; 97US-0853524.  
 PA (UNIW ) UNIV WASHINGTON.  
 PI Boime I, Moyle WR;  
 XX WPI: 2001-424301/45.  
 DR N-PSDB; AAS08509.  
 XX New single chain forms of the glycoprotein hormone quartet useful for  
 PT generating antibodies specifically immunoreactive with the new  
 PT compounds, in treating infertility, or as aids for in vivo  
 PT fertilization techniques -  
 PA Example 16; Fig 17; 86pp; English.  
 XX The sequence represents the amino acid sequence of single chain  
 CC gonadotropin analogue #1a. The glycoprotein hormone analogue is  
 CC useful for generating antibodies specifically immunoreactive with new  
 CC compounds, as a substitute for the heterodimeric forms of the hormones,  
 CC in the treatment of infertility, as an aid for in vivo fertilization  
 CC techniques, and in other therapeutic methods associated with the native  
 CC hormone. The single chain protein is further useful as a reagent in a  
 CC diagnostic assay for the detection of human chorionic gonadotropin (CG) in  
 CC biological samples, as a control reagent in assay kits for assessing the  
 CC levels of these hormones in various samples, and in detecting and  
 CC purifying receptors to which the native hormones bind. The single chain  
 CC forms of the heterodimers or homodimers have the following advantages  
 CC over their dimeric forms: they are more stable, problems of recombinant  
 CC production are reduced since only a single gene is needed to transcribe,  
 CC translate and process, provide an alternate form thus permitting fine  
 CC tuning of activity levels and of in vivo half lives. Single chain forms  
 CC are unique starting materials for identifying truncated forms with the  
 CC activity of the dimer. The linkage between the subunits permits the  
 CC protein to be engineered without disturbing the overall folding of the  
 CC protein.  
 XX Sequence 265 AA:  
 SQ  
 Query Match 99.1%; Score 770; DB 22; Length 265;  
 Best Local Similarity 100.0%; Pred. No. 3.3e-62;  
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 2 KEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCTPTMRVLQGVLPALPOVYCNHR 61  
 DB 21 KEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCTPTMRVLQGVLPALPOVYCNHR 80  
 QY 62 DVRFESIRLPCRGVNVVAVALSQCACLRSTTDCGPKDHLPTCDPRFQSSS 121  
 |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||

DB 81 DVRFESIRLPCRGVNVVAVALSQCACLRSTTDCGPKDHLPTCDPRFQSSS 140  
 QY 122 SKAPPSLPSPSLPSPSDT 141  
 |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||  
 DB 141 SKAPPSLPSPSLPSPSDT 160  
 RESULT 23  
 AAE04474  
 ID AAE04474 standard; Protein; 265 AA.  
 AC AAE04474;  
 XX 04-SEP-2001 (first entry)  
 DT Human single chain gonadotropin analog no:1.  
 DE Human; single chain gonadotropin analog no:1; anti-infertility; drug;  
 KW peptide therapy; luteinizing hormone; LH; follicle stimulating hormone;  
 KW FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;  
 KW glycoprotein; infertility; fusion protein.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX Key  
 FT Region  
 FT /note= "Corresponds to 1-145 amino acids of human  
 FT chorionic gonadotropin (CG) beta-subunit".  
 FT 166..173  
 FT Region  
 FT /note= "Linker peptide"  
 FT 174..265  
 FT /note= "Corresponds to 1-92 amino acids of human single  
 FT chain gonadotropin alpha-subunit".  
 XX US6238890-BI.  
 PN 29-MAY-2001.  
 PD 25-AUG-1997; 97US-0918288.  
 PR 18-FEB-1994; 94US-0199382.  
 PR 12-AUG-1994; 94US-0289396.  
 PR 22-SEP-1994; 94US-0310590.  
 PR 04-NOV-1994; 94US-0334628.  
 PR 07-DEC-1994; 94US-0351591.  
 PR 07-JUN-1995; 95US-0475049.  
 PR 05-MAY-1997; 97US-0853524.  
 PA (UNIW ) UNIV WASHINGTON.  
 PI Boime I, Moyle WR;  
 XX WPI: 2001-366474/38.  
 DR N-PSDB; AAD08785.  
 XX New DNA or RNA encoding single chain protein useful in treating  
 PT infertility, as aids in vitro fertilization techniques, or other  
 PT therapeutic methods associated with the native hormones -  
 PA Claim 9; Fig 5; 87pp; English.  
 XX The invention relates to human single chain forms of the glycoprotein  
 CC hormone quartet which is an agonist or antagonist of luteinizing hormone  
 CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone  
 CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers  
 CC having identical alpha subunits and differing beta subunits. The agonist  
 CC forms of single chain hormones are used in treating infertility, as aids  
 CC in vitro fertilization techniques, and other therapeutic methods  
 CC associated with the native hormones. The single chain hormones are useful  
 CC as reagents in a manner similar to heterodimers, as diagnostic tools to  
 CC detect the presence of antibodies with respect to the native proteins in  
 CC biological samples, as control reagents in assay kits for assessing the

CC levels of these hormones in various samples, in detecting and purifying  
CC receptors to which the native hormones bind. The single chain hormones  
CC are also used in affinity chromatographic preparation of receptors or  
CC antihormone antibodies. They are used as purification tools for  
CC isolation of subsequent preparations of these materials and to monitor  
CC levels of single chain hormones administered as drugs. The single chain  
CC glycoproteins are used to generate antibodies specifically immunoreactive  
CC both these new compounds, as substitutes for the heterodimeric forms of  
CC hormones. The present sequence is human single chain gonadotropin analog  
CC of human chorionic gonadotropin (CG) beta-subunit (1-145 amino acids)  
CC fused to human single chain gonadotropin alpha-subunit (1-92 amino acids)  
CC by a linker sequence. This analog serves as a useful starting compound  
CC for template directed vaccine design and for the development of hormone-  
CC specific vaccines for use in humans.

XX Sequence 265 AA;

Query Match 99.13; Score 770; DB 22; Length 265;  
Best Local Similarity 100.0%; Posed No. 3,3e+62;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTRVLCQVLPALPQVYCNR 61  
DB 21 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTRVLCQVLPALPQVYCNR 80  
QY 62 DVRFESIRLPCPGVGNVYSVALSCQALCRSTTDCGPKDHPFLTCDDPRQDSSS 121  
DB 81 DVRFESIRLPCPGVGNVYSVALSCQALCRSTTDCGPKDHPFLTCDDPRQDSSS 140  
QY 122 SKAPPSLPSPRLCPGSDT 141  
DB 141 SKAPPSLPSPRLCPGSDT 160

RESULT 24  
AAE04486  
ID AAE04486 standard; Protein; 265 AA.  
AC AAE04486;

04-SEP-2001 (first entry)

Human single chain gonadotropin analog no:1a.

Human; single chain gonadotropin analog no:1a; anti-infertility; drug;  
peptide therapy; luteinizing hormone; LH; follicle stimulating hormone;  
FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;  
glycoprotein; infertility; fusion protein; mutant; mutain.

OS Homo sapiens.  
QS Synthetic.

XX Key Location/Qualifiers  
FH Region 21..165  
FT /note- "Corresponds to 1-145 amino acids of human  
FT chorionic gonadotropin (CG) beta-subunit".  
FT Region 166..173  
FT /note- "Linker peptide".  
FT Region 174..265  
FT /note- "Corresponds to 1-92 amino acids of human single  
FT chain gonadotropin alpha-subunit".  
FT Misc-difference 225.  
FT /note- "Wild type Asn substituted with Gln".  
FT Misc-difference 251.  
FT /note- "Wild type Asn substituted with Gln".

XX US6238890-B1.

XX 29-MAY-2001.

XX 25-AUG-1997; 9705-0918288.

XX

PR 18-FEB-1994; 94US-0199382.  
PR 12-AUG-1994; 94US-0289396.  
PR 22-SEP-1994; 94US-0310590.  
PR 04-NOV-1994; 94US-0334628.  
PR 07-DEC-1994; 94US-0351591.  
PR 07-JUN-1995; 95US-0475049.  
PR 09-MAY-1997; 97US-0853524.  
XX (UNIW ) UNIV WASHINGTON.  
XX Boime I, Moyle WR;  
XX WPI; 2001-366474/38.  
DR N-PSDB; AAD08809.  
XX New DNA or RNA encoding single chain protein useful in treating  
XX infertility, as aids in vitro fertilization techniques, or other  
XX therapeutic methods associated with the native hormones .  
XX Claim 9; Fig 17; 87pp; English.

CC The invention relates to human single chain forms of the glycoprotein  
CC hormone quartet which is an agonist or antagonist of luteinizing hormone  
CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone  
CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers  
CC having identical alpha subunits and differing beta subunits. The agonist  
CC forms of single chain hormones are used in treating infertility, as aids  
CC in vitro fertilization techniques, and other therapeutic methods useful  
CC as reagents in a manner similar to heterodimers, as diagnostic tools to  
CC detect the presence of antibodies with respect to the native proteins in  
CC biological samples, as control reagents in assay kits for assessing the  
CC levels of these hormones in various samples, in detecting and purifying  
CC receptors to which the native hormones bind. The single chain hormones  
CC are also used in affinity chromatographic preparation of receptors or  
CC antihormone antibodies. They are used as purification tools for  
CC isolation of subsequent preparations of these materials and to monitor  
CC levels of single chain hormones administered as drugs. The single chain  
CC glycoproteins are used to generate antibodies specifically immunoreactive  
CC both these new compounds, as substitutes for the heterodimeric forms of  
CC hormones. The present sequence is human single chain gonadotropin analog  
CC no:1a related to the invention. Analog no:1a is a fusion protein  
CC consisting of human chorionic gonadotropin (CG) beta-subunit (1-145 amino  
CC acids) fused to human single chain gonadotropin alpha-subunit (1-92 amino  
CC acids) by a linker sequence. This analog serves as a useful starting  
CC compound for template directed vaccine design and for the development of  
CC hormone-specific vaccines for use in humans.

XX Sequence 265 AA;

Query Match 99.13; Score 770; DB 22; Length 265;  
Best Local Similarity 100.0%; Posed No. 3,3e+62;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTRVLCQVLPALPQVYCNR 61  
DB 21 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGTCPTMTRVLCQVLPALPQVYCNR 80  
QY 62 DVRFESIRLPCPGVGNVYSVALSCQALCRSTTDCGPKDHPFLTCDDPRQDSSS 121  
DB 81 DVRFESIRLPCPGVGNVYSVALSCQALCRSTTDCGPKDHPFLTCDDPRQDSSS 140  
QY 122 SKAPPSLPSPRLCPGSDT 141  
DB 141 SKAPPSLPSPRLCPGSDT 160

RESULT 25

XX AAY43285

XX ID AAY43285 standard; Protein; 273 AA.

XX AAY43285;

XX



DT 19-JAN-2000 (first entry)  
 XX HCG beta subunit-Jun fusion protein sequence.  
 DE Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;  
 KW beta subunit; therapy; Jun.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX WO9953065-A1.  
 XX 21-OCT-1999.  
 PD 13-APR-1999; 99WO-US08018.  
 XX 14-APR-1998; 98US-0059625.  
 XX (UYNE-) UNIV NEW JERSEY.  
 XX Moyle WR;  
 XX WPI; 1999-620431/53.  
 DR Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins -  
 XX Example 6; Fig 18; 73pp; English.  
 XX This sequence is a fusion protein of hCG and Jun. The invention  
 CC relates to a method of forming a cysteine knot protein (I) having alpha  
 CC and beta subunits comprising attaching a dimerisation domain (DD) to  
 CC either the N-termini of both subunits or the N-terminus of the  
 CC the product to form heterodimers (II). The method is  
 CC used to produce analogues (agonists or antagonists) of dimerising  
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility  
 CC where caused by polycystic ovarian disease (associated with excessive  
 CC levels of luteinising hormone). Products that retain DD's are also useful  
 CC as immunogens or antigens (since a DD may contain highly antigenic  
 CC amino acid sequences). Attachment of a DD (which may be removed later)  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC (and thus receptor-binding and immunogenic properties) to native dimers,  
 CC poorly or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC formation of homodimers. Heterodimers have longer circulation times in  
 CC vivo than individual subunits.  
 XX Sequence 273 AA;  
 SQ Query Match 99.1%; Score 770; DB 20; Length 273;  
 Best Local Similarity 100.0%; Pred.No. 3.4e-62;  
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 2 SKEPLPRCPRIINATLAVEKGGCPVCIIVNTTICAGTCPTMTVRVLOGVLPALPQVWYNR 61  
 DB 129 SKEPLPRCPRIINATLAVEKGGCPVCIIVNTTICAGTCPTMTVRVLOGVLPALPQVWYNR 188  
 QY 62 DYRFESIRLPGCPGVNPVSVYAVALSQCACALCRSTTDCGPKDHPHLCDDPRQDSSS 121  
 DB 189 DYRFESIRLPGCPGVNPVSVYAVALSQCACALCRSTTDCGPKDHPHLCDDPRQDSSS 248  
 QY 122 SKAPPPSLPSPRLPGPSDT 141  
 DB 249 SKAPPPSLPSPRLPGPSDT 268  
 RESULT 26  
 ID ANY43292 standard; Protein; 273 AA.

XX ANY43292;  
 AC 19-JAN-2000 (first entry)  
 XX HCG beta subunit-Jun fusion protein sequence.  
 DE Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;  
 KW beta subunit; therapy; Jun.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX WO9953065-A1.  
 XX 21-OCT-1999.  
 PD 13-APR-1999; 99WO-US08018.  
 XX 14-APR-1998; 98US-0059625.  
 XX (UYNE-) UNIV NEW JERSEY.  
 XX Moyle WR;  
 XX WPI; 1999-620431/53.  
 DR Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins -  
 XX Example 6; Fig 19; 73pp; English.  
 XX This sequence is a fusion protein of HCG and Jun. The invention  
 CC relates to a method of forming a cysteine knot protein (I) having alpha  
 CC and beta subunits comprising attaching a dimerisation domain (DD) to  
 CC either the N-termini of both subunits or the N-terminus of the  
 CC the product to form heterodimers (II). The method is  
 CC used to produce analogues (agonists or antagonists) of dimerising  
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility  
 CC where caused by polycystic ovarian disease (associated with excessive  
 CC levels of luteinising hormone). Products that retain DD's are also useful  
 CC as immunogens or antigens (since a DD may contain highly antigenic  
 CC amino acid sequences). Attachment of a DD (which may be removed later)  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC (and thus receptor-binding and immunogenic properties) to native dimers,  
 CC poorly or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC formation of homodimers. Heterodimers have longer circulation times in  
 CC vivo than individual subunits.  
 XX Sequence 273 AA;  
 SQ Query Match 99.1%; Score 770; DB 20; Length 273;  
 Best Local Similarity 100.0%; Pred.No. 3.4e-62;  
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 2 SKEPLPRCPRIINATLAVEKGGCPVCIIVNTTICAGTCPTMTVRVLOGVLPALPQVWYNR 61  
 DB 129 SKEPLPRCPRIINATLAVEKGGCPVCIIVNTTICAGTCPTMTVRVLOGVLPALPQVWYNR 188  
 QY 62 DYRFESIRLPGCPGVNPVSVYAVALSQCACALCRSTTDCGPKDHPHLCDDPRQDSSS 121  
 DB 189 DYRFESIRLPGCPGVNPVSVYAVALSQCACALCRSTTDCGPKDHPHLCDDPRQDSSS 248  
 QY 122 SKAPPPSLPSPRLPGPSDT 141  
 DB 249 SKAPPPSLPSPRLPGPSDT 268

RESULT 27  
AAW47473  
ID AAW47473 standard; Protein; 165 AA.  
XX  
AC AAW47473;  
XX  
DT 23-SEP-1998 (first entry)  
XX  
DE Human beta-HCG protein.  
XX  
KW Beta-human chorionic gonadotropin; beta-hCG; hematopoietic cell;  
KW treatment; proliferation; human immunodeficiency virus; HIV; tumour;  
KW idiopathic thrombocytopenia purpura; anaemia; neutropenia;  
KW chemotherapy; radiation; autoimmune disease; genetic disorder.  
XX  
OS Homo sapiens.  
XX  
PH Key  
FT Peptide  
FT /label= signal  
FT /label= beta-hCG  
XX  
XX W09749418-AL.  
XX  
XX 31-DEC-1997.  
XX  
XX 24-JUN-1997; 97NO-US11209.  
XX  
XX 09-SEP-1996; 96US-0709924.  
XX  
XX 24-JUN-1996; 96US-0669654.  
XX  
XX (UYMA-) UNIV MARYLAND BIOTECHNOLOGY INST.  
XX  
XX Bryant J, Gallo RC, Lunardi-Iskandar Y;  
XX WPI: 1998-076906/07.  
XX N-PSDB; AAV18517.  
XX  
XX Treating or preventing disease by increasing production of  
XX hematopoietic cells - using human chorionic gonadotropin or its  
XX fragments or derivatives, in vivo or in vitro, e.g. in cases of HIV  
XX infection, anaemia etc.  
XX  
XX Claim 7; Fig 4; 162pp; English.  
XX  
XX This sequence represents the beta subunit of human chorionic gonadotropin  
XX which is used in a method for the treatment or prevention of disease, by  
XX the method of which is described in which non-terminally differentiated  
XX hematopoietic cells are treated in vitro to increase proliferation  
XX then returned to the patient. The method is specified for treating human  
XX immunodeficiency virus (HIV) infection, idiopathic thrombocytopenia  
XX purpura, anaemia or neutropenia, or subjects who have undergone  
XX chemotherapy or radiation treatment. More generally it can be used to  
XX treat a wide range of conditions involving hematopoietic failure, (non-)  
XX hematopoietic tumours, autoimmune disease and genetic disorders (using a  
XX transformed hematopoietic cell). The in vitro method can also be used to  
XX expand hematopoietic cells for subsequent therapeutic use.  
XX  
XX Sequence: 165 AA;  
XX  
XX Query Match 98.7%; Score 767; DB 19; Length 165;  
XX Best Local Similarity 99.3%; Pred. No. 3.8e-62;  
XX Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;  
XX  
XX 2 SKEPLRRCRPNATLAVEKGCPCVTITNTTICAGCPTMTVRLQVLPALPQVVCNVR 61  
XX  
XX 21 SKEPLRRCRPNATLAVEKGCPCVTITNTTICAGCPTMTVRLQVLPALPQVVCNVR 80  
XX  
XX 62 DVRFESIRLPCPGVNPVSYVALSCQALCRRTTDCGPKDHPKPLTCDPRQDSSS 121  
XX  
XX 81 DVRFESIRLPCPGVNPVSYVALSCQALCRRTTDCGPKDHPKPLTCDPRQDSSS 140  
XX  
XX 122 SKAPPSLPSRLPGPSDT 141  
XX  
XX 141 SKAPPSLPSRLPGPSDT 160

OY 122 SKAPPSLPSRLPGPSDT 141  
DB 141 SKAPPSLPSRLPGPSDT 160  
RESULT 28  
AAW33639  
ID AAW33639 standard; Protein; 165 AA.  
XX  
AC AAW33639;  
XX  
DT 26-JUN-1998 (first entry)  
XX  
DE Human chorionic gonadotropin beta-chain.  
XX  
KW Beta-chain; human; chorionic gonadotropin; beta-hCG; inhibition;  
KW human chorionic gonadotropin; beta-hCG; infection; replication;  
KW Kaposi's sarcoma; hematopoiesis.  
XX  
OS Homo sapiens.  
XX  
PH Key  
FT Peptide  
FT /label= slg\_peptide  
FT /label= 21..165  
FT /label= mat\_peptide  
XX  
XX W09749373-A2.  
XX  
XX 31-DEC-1997.  
XX  
XX 24-JUN-1997; 97NO-US11202.  
XX  
XX 09-SEP-1996; 96US-0709948.  
XX  
XX 24-JUN-1996; 96US-0669661.  
XX  
XX (UYMA-) UNIV MARYLAND BIOTECHNOLOGY INST.  
XX  
XX Bryant J, Gallo RC, Lunardi-Iskandar Y;  
XX WPI: 1998-076887/07.  
XX N-PSDB; AAV04780.  
XX  
XX Human chorionic gonadotropin peptide derivatives - are active in  
XX inhibiting, e.g. HIV infection or replication, Kaposi's Sarcoma or  
XX have pro-hematopoietic activity  
XX  
XX Claim 1; Page 101; 174pp; English.  
XX  
XX The present sequence is the beta-chain of human chorionic  
XX gonadotropin (beta-hCG), peptide derivatives of which are active  
XX in inhibiting, e.g. HIV infection or replication or Kaposi's  
XX sarcoma, or have pro-hematopoietic activity.  
XX  
XX Sequence: 165 AA;  
XX  
XX Query Match 98.7%; Score 767; DB 19; Length 165;  
XX Best Local Similarity 99.3%; Pred. No. 3.8e-62;  
XX Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;  
XX  
XX 2 SKEPLRRCRPNATLAVEKGCPCVTITNTTICAGCPTMTVRLQVLPALPQVVCNVR 61  
XX  
XX 21 SKEPLRRCRPNATLAVEKGCPCVTITNTTICAGCPTMTVRLQVLPALPQVVCNVR 80  
XX  
XX 62 DVRFESIRLPCPGVNPVSYVALSCQALCRRTTDCGPKDHPKPLTCDPRQDSSS 121  
XX  
XX 81 DVRFESIRLPCPGVNPVSYVALSCQALCRRTTDCGPKDHPKPLTCDPRQDSSS 140  
XX  
XX 122 SKAPPSLPSRLPGPSDT 141  
XX  
XX 141 SKAPPSLPSRLPGPSDT 160

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RESULT 29
AAW33637
ID AAW33637 standard; Protein; 165 AA.
AC
XX
XX AAW33637;
XX
XX 26-JUN-1998 (first entry)
DT
XX
XX Human chorionic gonadotropin beta-chain.
DE
XX
XX Beta-chain; human; chorionic gonadotropin; beta-hCG; treatment;
KW prevention; wasting syndrome; viral infection; cancer;
KW chronic cardiovascular disease; chemotherapy;
KW radiation therapy.
XX
XX Homo sapiens.
XX
XX Key Location/Qualifiers
XX Peptide 1..20
XX /label= sig_peptide
XX Peptide 21..165
XX /label= mat_peptide
XX
XX W09749721-AL.
XX
XX 31-DEC-1997.
XX
XX 24-JUN-1997; 97WO-US11448.
XX
XX 09-SEP-1996; 96US-0709913.
XX 24-JUN-1996; 96US-0669675.
XX
XX (UTMA-) UNIV MARYLAND BIOTECHNOLOGY INST.
XX
XX Bryant J, Gallo RC, Lunardi-Ikandar Y;
XX
XX WPI; 1998-077106/07.
XX N-PSDB; AAW04779.
XX
XX Treating or preventing wasting syndrome - by administration of human
XX chorionic gonadotropin, beta-hCG, peptides or derivatives of these
XX
XX Claim 8; Page 69; 126pp; English.
XX
XX The present sequence is the beta-chain of human chorionic
XX gonadotropin (beta-hCG), peptide derivatives of which can be used
XX to treat or prevent a wasting syndrome associated with viral
XX infection, e.g. human immunodeficiency syndrome virus infection,
XX cancer, chronic cardiovascular disease, chemotherapy or radiation
XX therapy.
XX
XX Sequence 165 AA:
Query Match 98.74; Score 167; DB 19; Length 165;
Best Local Similarity 99.34; Pred. No. 3.8e-62;
Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGTCPTMTVRVLOGVLPALPQVVCNHR 61
DB 21 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGTCPTMTVRVLOGVLPALPQVVCNHR 80
QY 62 DYRFESIRLPGCPGPNVYVAVALSCQALCRSTTDCGGPKDHLPTCDPRQDS55 121
DB 81 DYRFESIRLPGCPGPNVYVAVALSCQALCRSTTDCGGPKDHLPTCDPRQDS55 140
QY 122 SKAPPPSLPSPRLPGSDT 141
DB 141 SKAPPPSLPSPRLPGSDT 160
RESULT 30
AAW99530
ID AAW99530 standard; Protein; 145 AA.
AC
XX
XX AAW99530;
XX
XX 08-JUN-1999 (first entry)
DT
XX
XX Human chorionic gonadotropin beta subunit.
XX
XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;
KW human follicle stimulating hormone; human thyroid stimulating hormone;
KW stability; primer; amplification; PCR; mutation.
XX
XX Homo sapiens.
XX
XX Key Location/Qualifiers
XX Disulfide-bond 9..90
XX Disulfide-bond 91..112
XX Disulfide-bond 113..110
XX Disulfide-bond 114..88
XX Disulfide-bond 115..57
XX Disulfide-bond 116..100
XX
XX W09858957-A2.
XX
XX 30-DEC-1998.
XX
XX 25-JUN-1998; 98WO-US13070.
XX
XX 25-JUN-1997; 97US-0050784.
XX
XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.
XX (MCIN-) MCINNIS P G.
XX
XX Moyle WR;
XX
XX WPI; 1999-081219/07.
XX
XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
XX hTSH - in which the subunit disulphide crosslink between the
XX alpha- and beta-subunits to improve stability
XX
XX Disclosure; Fig 2B; 139pp; English.
XX
XX The invention relates to the production of analogues of a heterodimeric
XX subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
XX (hCG), human luteinising hormone (hLH), human follicle stimulating
XX hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
XX proteins, which are modified to contain an intersubunit disulphide bond,
XX between an alpha-subunit cysteine and a beta-subunit cysteine. Part of the
XX disulphide bond is replaced by a heterodimeric subunit. Part of the
XX bioactivity for the corresponding native GPH receptor. This sequence
XX represents the wild type hCG-beta subunit used for the generation of
XX the modified GPHs. The improved analogues are designed specifically
XX to reduce perturbation of the 3-dimensional structure of the hormone,
XX thereby creating greater likelihood that the dimer will be formed in vivo
XX and the formed dimer will have affinity for the native receptors and have
XX agonistic activity on them. The changes stabilise the GPHs and prolong
XX the biological activities of the hormones. The analogues can have uses
XX as for the native GPHs.
XX
XX Sequence 145 AA:
Query Match 98.64; Score 766; DB 20; Length 145;
Best Local Similarity 98.64; Pred. No. 4.1e-62;
Matches 138; Conservative 2; Mismatches 0; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGTCPTMTVRVLOGVLPALPQVVCNHR 61
DB 1 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGTCPTMTVRVLOGVLPALPQVVCNHR 60
QY 62 DYRFESIRLPGCPGPNVYVAVALSCQALCRSTTDCGGPKDHLPTCDPRQDS55 121

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DB 61 DVFESIRLPGCGPGVWVYVAVALSCQALCRSTTDCGGPKDHPDLTCDPDPQDSSS 120  
QY 122 SKAPPSLPSPSLPGSDT 141  
DB 121 SKAPPSLPSPSLPGSDT 140  
RESULT 31  
AAW9508  
ID AAW9508 standard; Protein: 165 AA.  
XX  
AC AAW9508;  
XX  
DT 08-JUN-1999 (first entry)  
XX  
DE Glycoprotein hormone analogue hCG-beta-A35C.  
XX  
KW Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
KW human follicle stimulating hormone; human thyroid stimulating hormone;  
KW stability; primer; amplification; PCR; mutation.  
XX  
OS Homo sapiens.  
XX  
PS Synthetic.  
XX  
PN W09858957-A2.  
XX  
PD 30-DEC-1998.  
XX  
PF 25-JUN-1998: 98MO-US13070.  
XX  
PR 25-JUN-1997: 97US-0050784.  
XX  
PA (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.  
XX (MCIN-) MCINNIS P G.  
XX  
PI Moyle WR;  
XX  
PZ WPI: 1999-081219/07.  
XX  
DR New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
XX or hTSH, have an intersubunit disulphide crosslink between the  
XX alpha- and beta-subunits to improve stability  
XX  
PS Example 12; Page 89; 139pp; English.  
XX  
CC The invention relates to the production of analogues of a heterodimeric  
XX subunit glycoprotein hormone (GPH), e.g. human chorionic gonadotropin  
XX (hCG), human luteinising hormone (LH), human follicle stimulating  
XX hormone (hFSH), human thyroid stimulating hormone (hTSH) and functional  
XX muteins, which are modified to contain an intersubunit disulphide bond,  
XX between an alpha-subunit cysteine and a beta-subunit cysteine, for  
XX improved stability, the analogue retaining at least a portion of the  
XX bioactivity for the corresponding native GPH receptor. This sequence  
XX represents a mutated hCG-beta subunit used for the generation of the  
XX modified GPHs. The improved analogues are designed specifically to  
XX reduce perturbation of the 3-dimensional structure of the hormone,  
XX thereby creating greater likelihood that the dimer will be formed in vivo  
XX and the formed dimer will have affinity for the native receptors and have  
XX and the formed dimer will have affinity for the native receptors and have  
XX the biological activities of the hormones. The analogues can have uses  
XX as for the native GPHs.  
XX  
SQ Sequence 165 AA:  
Query Match 98.6%; Score 766; DB 20; Length 165;  
Best Local Similarity 99.3%; Pred. No. 4.6e-62;  
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
QY 2 SKEPLAPRCRFINATLAVKECCPCVITVNTTICAGTCPTMTVRVLOGVLPALPQVVCNTR 61  
DB 21 SKEPLAPRCRFINATLAVKECCPCVITVNTTICAGTCPTMTVRVLOGVLPALPQVVCNTR 80

QY 62 DVFESIRLPGCGPGVWVYVAVALSCQALCRSTTDCGGPKDHPDLTCDPDPQDSSS 121  
DB 81 DVFESIRLPGCGPGVWVYVAVALSCQALCRSTTDCGGPKDHPDLTCDPDPQDSSS 140  
QY 122 SKAPPSLPSPSLPGSDT 141  
DB 141 SKAPPSLPSPSLPGSDT 160  
RESULT 32  
AAW57315  
ID AAW57315 standard; Protein: 176 AA.  
XX  
AC AAW57315;  
XX  
DT 19-JUN-2000 (first entry)  
XX  
DE Human betahCG/beta-gal fusion protein.  
XX  
KW Human chorionic gonadotropin; hCG; betahCG; vaccine; chitosan;  
KW infertility; betahCG/beta-gal; fusion protein.  
XX  
OS Homo sapiens.  
XX  
PN W0200015253-A1.  
XX  
PD 23-MAR-2000.  
XX  
PF 16-SEP-1999; 99MO-US21591.  
XX  
PR 17-SEP-1998; 98US-0100766.  
XX  
PA (ZONA-) ZONAGEN INC.  
XX  
PI Harris J, Martinez M;  
XX WPI: 2000-271358/23.  
XX  
PZ N-PSDB; AA290609.  
XX  
DR Novel human beta-subunit chorionic gonadotropin vaccines used to  
XX interrupt fertility in mammals by the immunological inactivation of the  
XX pregnancy hormone chorionic gonadotropin -  
XX  
PS Claim 5; Page 32-33; 39pp; English.  
XX  
CC The invention provides novel vaccine compositions which comprise the  
XX beta-subunit of human chorionic gonadotropin (betahCG) in combination  
XX with chitosan-based adjuvants. The vaccines are used to induce  
XX an immune response against the betahCG subunit. The vaccines comprise  
XX compositions that are also used for antibody production. The vaccines comprise  
XX a well-tolerated chitosan-based adjuvant which induces the production of  
XX anti-chorionic gonadotropin antibodies without inducing the side effects  
XX (e.g. hypersensitivity, erythema, etc.) associated with other adjuvants.  
XX The vaccine also overcomes the problem of non-responsiveness in some  
XX individuals. The present sequence represents a betahCG/beta-gal fusion  
XX protein consisting of leaderless betahCG linked to a beta-gal fragment.  
XX  
SQ Sequence 176 AA:  
Query Match 98.6%; Score 766; DB 21; Length 176;  
Best Local Similarity 100.0%; Pred. No. 5e-62;  
Matches 139; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 3 KEPLAPRCRFINATLAVKECCPCVITVNTTICAGTCPTMTVRVLOGVLPALPQVVCNTR 62  
DB 26 KEPLAPRCRFINATLAVKECCPCVITVNTTICAGTCPTMTVRVLOGVLPALPQVVCNTR 85  
QY 63 VFESIRLPGCGPGVWVYVAVALSCQALCRSTTDCGGPKDHPDLTCDPDPQDSSS 122  
DB 86 VFESIRLPGCGPGVWVYVAVALSCQALCRSTTDCGGPKDHPDLTCDPDPQDSSS 145  
QY 123 KAPPSLPSPSLPGSDT 141

Db 146 KAPPPSLPSPRLPGSDT 164

RESULT 33  
AAV57316  
ID AAY57316 standard; Protein: 252 AA.  
XX  
AC AAY57316;  
XX  
DT 19-JUN-2000 (first entry)  
XX  
DE Alpha-mating factor fragment/betahCG fusion protein.  
XX  
KW Human chorionic gonadotropin; hCG; betahCG; vaccine; chitosan;  
XX  
WU infertility; betahCG/beta-gal; fusion protein.  
XX  
OS Homo sapiens.  
XX  
PN MO200015253-A1.  
XX  
PD 23-MAR-2000.  
XX  
PF 16-SEP-1999; 99WO-US21591.  
XX  
XZ 17-SEP-1998; 98US-0100766.  
XX  
PA (ZONA-) ZONAGEN INC.  
XX  
PI Harris J. Martinez M;  
XX  
DR N-PSDB: AA290610.  
XX  
XX  
XX Novel human beta-subunit chorionic gonadotropin vaccines used to  
PT interrupt fertility in mammals by the immunological inactivation of the  
PT pregnancy hormone chorionic gonadotropin  
XX  
XX Claim 5; Page 34-35; 39pp; English.  
XX  
CC The invention provides novel vaccine compositions which comprise the  
CC beta-subunit of human chorionic gonadotropin (betahCG) in combination  
CC with chitosan-based adjuvants. The vaccines are used to induce  
CC infertility especially transient infertility, in female mammals. The  
CC compositions are also used for antibody production. The vaccines comprise  
CC a well-tolerated chitosan-based adjuvant which induces the production of  
CC anti-chorionic gonadotropin antibodies, without inducing the side effects  
CC of hypersensitivity, erythema, etc.) associated with other adjuvants.  
CC The vaccines induce an immune response in the female mammals in some  
CC individuals. The present sequence represents a betahCG fragment  
CC fused to an alpha-mating factor leader sequence at the N-terminus.  
XX  
SQ Sequence 252 AA;

Query Match 98.6%; Score 766; DB 21; Length 252;  
Best Local Similarity 100.0%; Pred. No. 7.2e-62;  
Matches 139; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Oy 3 KEPLAPRCRPNATLAVREKCPVCIIVNTTICAGYCPPTMRVLOGVLPALPQVVCNRR 62  
Db 101 KEPLAPRCRPNATLAVREKCPVCIIVNTTICAGYCPPTMRVLOGVLPALPQVVCNRR 160  
Oy 63 VRFESIRLPCRGVNVVYVAVALSQCACLRSTTDCGPKDHPKLTCDPDPQSSSS 122  
Db 161 VRFESIRLPCRGVNVVYVAVALSQCACLRSTTDCGPKDHPKLTCDPDPQSSSS 220  
Oy 123 KAPPPSLPSPRLPGSDT 141  
Db 221 KAPPPSLPSPRLPGSDT 239

RESULT 34  
AAR15171  
ID AAR15171 standard; Protein: 145 AA.

XX AAR15171;  
AC  
DT 11-FEB-1992 (first entry)  
XX  
DE hCG methionine substitution mutant, G3.  
XX  
KW hCG methionine hormone; human chorionic gonadotropin; disulphide.  
XX  
OS Homo sapiens.  
XX  
PN WO9116922-A.  
XX  
PD 14-NOV-1991.  
XX  
XZ 07-MAY-1991; 91WO-US03162.  
XX  
PR 08-MAY-1990; 90US-0520703.  
XX  
PA (UYNE-) UNIV MED NEW JERSEY.  
XX  
PI Campbell RK, Moyle WR;  
XX  
DR WPI; 1991-353528/48.  
XX  
XX New glyco-protein hormone analogues - for inducing fertility as  
PT immuno-castration agents, for suppressing reproductive system  
PT development and as immuno-contragative vaccines.  
XX  
XX Table VIII; Page 67; 94pp; English.  
XX  
CC The sequence is an analogue of mature hCG beta subunit having  
CC residue 89 replaced by a methionine residue. This introduces an  
CC additional cleavage site for CNBR, useful for determining the  
CC disulphide bonds. This can be used to show that mutagenesis has  
CC not altered the "normal" disulphide pattern of analogues, and for  
CC examining protein folding.  
XX  
XX See AAR15043, AAR15061 R15125 and AAR15161-R15198.  
XX  
SQ Sequence 145 AA;

Query Match 98.5%; Score 765; DB 12; Length 145;  
Best Local Similarity 99.3%; Pred. No. 5e-62;  
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

Oy 2 SKEPLAPRCRPNATLAVREKCPVCIIVNTTICAGYCPPTMRVLOGVLPALPQVVCNRR 61  
Db 1 SKEPLAPRCRPNATLAVREKCPVCIIVNTTICAGYCPPTMRVLOGVLPALPQVVCNRR 60  
Oy 62 DVRFESIRLPCRGVNVVYVAVALSQCACLRSTTDCGPKDHPKLTCDPDPQSSSS 121  
Db 61 DVRFESIRLPCRGVNVVYVAVALSQCACLRSTTDCGPKDHPKLTCDPDPQSSSS 120

Oy 122 SKAPPPSLPSPRLPGSDT 141  
Db 121 SKAPPPSLPSPRLPGSDT 140

RESULT 35  
AAR15172  
ID AAR15172 standard; Protein: 145 AA.  
XX  
AC AAR15173;  
XX  
DT 11-FEB-1992 (first entry)  
XX  
DE hCG histidine substitution mutant, G5.  
XX  
KW Glycoprotein hormone; human chorionic gonadotropin; disulphide.  
XX  
OS Homo sapiens.  
XX  
PN WO9116922-A.

XX 14-NOV-1991.  
 PD 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 PR (UTNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 PI WPI; 1991-35328/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table VIII; Page 67; 94pp; English.  
 PS The sequence is an analogue of mature hCG beta subunit having  
 CC residue 37 replaced by a histidine residue. This introduces an  
 CC additional cleavage site for CNBr, useful for determining the  
 CC disulphide bonds. This can be used to show that mutagenesis has  
 CC not altered the 'normal' disulphide pattern of analogues, and for  
 CC examining protein folding.  
 CC See ARI15043, ARI15061-R15125 and ARI15161-R15198.  
 XX Sequence 145 AA;  
 SQ Query Match 98.5%; Score 765; DB 12; Length 145;  
 Best Local Similarity 99.3%; Pred. No. 5e-62;  
 Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLCQVLPALPQVVCNVR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLCQVLPALPQVVCNVR 60  
 OY 62 DVRFESTRLPCPGVNVVYVALSCCALCRSTTDCGPKDHPFLCDDPRFDSSS 121  
 DB 61 DVRFESTRLPCPGVNVVYVALSCCALCRSTTDCGPKDHPFLCDDPRFDSSS 120  
 OY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140  
 RESULT 36  
 AAW95514  
 ID AAW95514 standard; Protein; 165 AA.  
 AC AAW95514;  
 XX 08-JUN-1999 (first entry)  
 DT Glycoprotein hormone analogue hCG-beta-V44C.  
 DE Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 KM human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KM human follicle stimulating hormone; human thyroid stimulating hormone;  
 KM stability; primer; amplification; PCR; mutation.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX WO9858957-A2.  
 PN 30-DEC-1998.  
 PD 25-JUN-1998; 98WO-US13070.  
 PF 25-JUN-1997; 97US-0050784.  
 PR (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 PA

PA (MCIN-) MCINNIS P G.  
 XX Moyle WR;  
 XX WPI; 1999-081219/07.  
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 PT hTSH; have an intersubunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability  
 XX Example 12; Page 89; 139pp; English.  
 PS The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating  
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 CC proteins, which are modified to contain an intersubunit disulphide bond,  
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for the  
 CC formation of a disulphide bond. The invention also relates to the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutated hCG-beta subunit used for the generation of the  
 CC modified GPHs. The improved analogues are designed specifically to  
 CC reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer will have affinity for the native receptors and have  
 CC agonistic activity on them. The changes stabilise the GPHs and prolong  
 CC the biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX Sequence 165 AA;  
 SQ Query Match 98.5%; Score 765; DB 20; Length 165;  
 Best Local Similarity 99.3%; Pred. No. 5.7e-62;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLCQVLPALPQVVCNVR 61  
 DB 21 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLCQVLPALPQVVCNVR 80  
 OY 63 DVRFESTRLPCPGVNVVYVALSCCALCRSTTDCGPKDHPFLCDDPRFDSSS 121  
 DB 81 DVRFESTRLPCPGVNVVYVALSCCALCRSTTDCGPKDHPFLCDDPRFDSSS 140  
 OY 122 SKAPPSLPSPRLPGSDT 141  
 DB 141 SKAPPSLPSPRLPGSDT 160  
 RESULT 37  
 AAW95507  
 ID AAW95507 standard; Protein; 165 AA.  
 AC AAW95507;  
 XX 08-JUN-1999 (first entry)  
 DT Glycoprotein hormone analogue hCG-beta-V56C.  
 DE Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 KM human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KM human follicle stimulating hormone; human thyroid stimulating hormone;  
 KM stability; primer; amplification; PCR; mutation.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX WO9858957-A2.  
 PN 30-DEC-1998.  
 PD 25-JUN-1998; 98WO-US13070.  
 PF 25-JUN-1997; 97US-0050784.  
 PR

XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 PA (MCIN-) MCINNIS P G.  
 XX Moyle WR;  
 XX WPI; 1999-081219/07.  
 DR New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 PT or hTSH, have an intersubunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability  
 XX Example 12: Page 89; 139pp; English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human thyroid stimulating hormone (hTSH), human follicle stimulating  
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 CC mutants, which are modified to contain an intersubunit disulphide bond,  
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 CC improved stability, the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutated hCG-beta subunit used for the generation of the  
 CC modified GPHs. The improved analogues are designed specifically to  
 CC reduce perturbation of the 3-dimensional structure of the hormone,  
 CC and thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer will have affinity for the native receptors and have  
 CC agonistic activity on them. The changes stabilise the GPHs and prolong  
 CC the biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX Sequence 165 AA:

Query Match 98.5%; Score 765; DB 20; Length 165;  
 Best Local Similarity 99.3%; Pred. No. 5.7e-62;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTRVLOGVLPALPOVCCNR 61  
 DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTRVLOGVLPALPOVCCNR 80  
 QY 62 DVRFESIRLPGCPGVNPVSVYAVALSQCACALCRSTTDCGGPKDHPLTCDPRFDSSS 121  
 DB 81 DVRFESIRLPGCPGVNPVSVYAVALSQCACALCRSTTDCGGPKDHPLTCDPRFDSSS 140  
 QY 122 SKAPPSLPSPSLPGPSDT 141  
 DB 141 SKAPPSLPSPSLPGPSDT 160

RESULT 38  
 AAW99509  
 ID AAW99509 standard; Protein: 165 AA.  
 XX AAW99509;  
 AC AAW99509;  
 DT 08-JUN-1999 (first entry)  
 XX Glycoprotein hormone analogue hCG-beta-133C.  
 DE Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 XX human chorionic gonadotropin; human thyroid stimulating hormone; human  
 KW human follicle stimulating hormone; human thyroid stimulating hormone;  
 KW stability; primer; amplification; PCR; mutation.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX W09858957-A2.  
 PN 30-DEC-1998.  
 PD 25-JUN-1998; 98MO-US13070.

XX 25-JUN-1997; 97US-0050784.  
 PR (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 PA (MCIN-) MCINNIS P G.  
 XX Moyle WR;  
 XX WPI; 1999-081219/07.  
 DR New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 PT or hTSH, have an intersubunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability  
 XX Example 12: Page 89; 139pp; English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human thyroid stimulating hormone (hTSH), human follicle stimulating  
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 CC mutants, which are modified to contain an intersubunit disulphide bond,  
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 CC improved stability, the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutated hCG-beta subunit used for the generation of the  
 CC modified GPHs. The improved analogues are designed specifically to  
 CC reduce perturbation of the 3-dimensional structure of the hormone,  
 CC and thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer will have affinity for the native receptors and have  
 CC agonistic activity on them. The changes stabilise the GPHs and prolong  
 CC the biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX Sequence 165 AA:

Query Match 98.5%; Score 765; DB 20; Length 165;  
 Best Local Similarity 99.3%; Pred. No. 5.7e-62;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTRVLOGVLPALPOVCCNR 61  
 DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTRVLOGVLPALPOVCCNR 80  
 QY 62 DVRFESIRLPGCPGVNPVSVYAVALSQCACALCRSTTDCGGPKDHPLTCDPRFDSSS 121  
 DB 81 DVRFESIRLPGCPGVNPVSVYAVALSQCACALCRSTTDCGGPKDHPLTCDPRFDSSS 140  
 QY 122 SKAPPSLPSPSLPGPSDT 141  
 DB 141 SKAPPSLPSPSLPGPSDT 160

RESULT 39  
 AAR15169  
 ID AAR15169 standard; Protein: 145 AA.  
 XX AAR15169;  
 AC AAR15169;  
 DT 11-FEB-1992 (first entry)  
 XX hCG methionine substitution mutant, G1.  
 DE hCG methionine substitution mutant, G1.  
 KW Glycoprotein hormone; human chorionic gonadotropin; disulphide.  
 XX Homo sapiens.  
 OS W09116922-A.  
 PN 14-NOV-1991.  
 PD 07-MAY-1991; 91MO-US03162.  
 PF 08-MAY-1990; 9005-0520703.  
 XX

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XX PA (UTNE-) UNIV MED NEW JERSEY.
XX PI Campbell RK, Moyle WR;
XX PA WPI; 1991-353520/48.
XX CC New glyco-protein hormone analogues - for inducing fertility as
XX PT immuno-castration agents for suppressing reproductive system
XX PT development and as immuno-contragestive vaccines.
XX PS Table VIII; Page 67; 94pp; English.
XX CC The sequence is an analogue of mature hCG beta subunit having
XX CC residues 12 and 27 replaced by methionine residues. This
XX CC introduces additional cleavage sites for CNBR, useful for
XX CC determining the disulfide bonds. This can be used to show that
XX CC analogues, and for examining protein folding.
XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX PS Sequence 145 AA:
XX
XX Query Match 98.3%; Score 764; DB 12; Length 145;
XX Best Local Similarity 98.6%; Pred. No. 6.2e-62;
XX Matches 136; Conservative 2; Mismatches 0; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRPRCPINATLAVKEGCGPCVITVTTICAGYCPMTVRVLOGVLPALPOVCNVR 61
XX DB 1 SKEPLRPRCPINATLAVKEGCGPCVITVTTICAGYCPMTVRVLOGVLPALPOVCNVR 60
XX
XX QY 62 DVRFESIRLPCGPGVNPVSVYVALSCCALCRSTTDCGPKDHPDPTCDPRFQDSSS 121
XX DB 61 DVRFESIRLPCGPGVNPVSVYVALSCCALCRSTTDCGPKDHPDPTCDPRFQDSSS 120
XX
XX QY 122 SKAPPSLPSPSLRPGSDT 141
XX DB 121 SKAPPSLPSPSLRPGSDT 140
XX
XX RESULT 40
XX ID AAR30999 standard; protein; 145 AA.
XX AC AAR30999;
XX DT 14-MAY-1993 (first entry)
XX DE Human chorionic gonadotropin beta-subunit.
XX KW hCG; glycoprotein hormone analogue; human infertility; LH; FSH;
XX KW luteinizing hormone receptor; follicle stimulating hormone receptor;
XX KW vertebrate; polycystic ovarian disease.
XX OS Homo sapiens.
XX PA W09222568-A.
XX PN 23-DEC-1992.
XX PD 18-JUN-1992; 92MO-US05207.
XX PF 18-JUN-1991; 91US-0717151.
XX PR (UTNE-) UNIV MED NEW JERSEY.
XX PA Campbell RK, Moyle WR;
XX PI WPI; 1993-018070/02.
XX CC New alpha, beta-heterodimeric polypeptide deriva. - which bind to
XX PT luteinizing and follicle stimulating hormone receptors, useful for
XX PT controlling the ratio of FSH to LH activity

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XX PS Disclosure; Page 20; 98pp; English.
XX CC The sequence is that of the beta-subunit of human chorionic
XX CC gonadotropin which was used in the creation of a beta-subunit
XX CC peptide analogue as part of an alpha, beta-heterodimeric polypeptide
XX CC having an affinity to vertebrate luteinizing hormone (LH) receptors
XX CC and vertebrate follicle stimulating hormone (FSH) receptors. This can
XX CC be used for treating human infertility or polycystic ovarian disease.
XX PS Sequence 145 AA:
XX
XX Query Match 98.3%; Score 764; DB 14; Length 145;
XX Best Local Similarity 99.3%; Pred. No. 6.2e-62;
XX Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRPRCPINATLAVKEGCGPCVITVTTICAGYCPMTVRVLOGVLPALPOVCNVR 61
XX DB 1 SKEPLRPRCPINATLAVKEGCGPCVITVTTICAGYCPMTVRVLOGVLPALPOVCNVR 60
XX
XX QY 62 DVRFESIRLPCGPGVNPVSVYVALSCCALCRSTTDCGPKDHPDPTCDPRFQDSSS 121
XX DB 61 DVRFESIRLPCGPGVNPVSVYVALSCCALCRSTTDCGPKDHPDPTCDPRFQDSSS 120
XX
XX QY 122 SKAPPSLPSPSLRPGSDT 141
XX DB 121 SKAPPSLPSPSLRPGSDT 140
XX
XX RESULT 41
XX ID AAM31200 standard; protein; 145 AA.
XX AC AAM31200;
XX DT 16-FEB-1998 (first entry)
XX DE Human chorionic gonadotropin beta subunit.
XX KW chorionic gonadotropin; hCG; hormone; glycoprotein; tumour; beta-subunit;
XX KW arginine specific; metalloprotease; binding assay; detection; prognosis;
XX KW gonadotropin beta-subunit nicking enzyme; GBNE; pheanthroline;
XX KW leupeptin; cervical cancer; endometrial cancer; ovarian cancer;
XX KW prostate cancer; testicular cancer; tubal cancer; uterine cancer;
XX KW vaginal cancer; vulvar cancer; reproductive cancer; therapy; screening.
XX OS Homo sapiens.
XX PA US5674727-A.
XX PN 07-OCT-1997.
XX PD 31-AUG-1994; 94US-0298189.
XX PR 31-AUG-1994; 94US-0298189.
XX PA (COLE/) COLE L A.
XX PA (KARD/) KARDANA A.
XX PI Cole LA, Kardana A;
XX DR WPI; 1997-502335/46.
XX CC Chorionic gonadotropin beta-subunit nicking enzyme - useful as
XX PT reproductive cancer marker
XX PS Claim 1; Columns 9-11; 7pp; English.

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XX This protein sequence represents the beta-subunit of human chorionic  
 CC gonadotropin (hCG) which can be used in a novel method for detecting  
 CC reproductive cancers and associated tumours. hCG is a dimeric  
 CC glycoprotein consisting of two subunits, alpha and beta. The alpha  
 CC subunit is common to all glycoproteins and is also associated with the  
 CC pregnancy testing however it is also associated with the detection of  
 CC reproductive tumours in both men and women. The hCG beta-subunit can  
 CC be cleaved by gonadotropin beta-subunit nicking enzyme (GBNE) which is  
 CC an arginine specific metalloprotease capable of cleaving the hCG beta  
 CC subunit at Arg44 or Gly47, but is partially inhibited by phenanthroline  
 CC or leupeptin. Over 90 per cent of cancer patients show elevated levels of  
 CC GBNE in their blood, therefore, specific binding assays for the presence  
 CC of GBNE are useful in the detection and prognosis of cervical,  
 CC endometrial, ovarian, prostate, testicular, tubal, uterine, vaginal or  
 CC other cancer. GBNE can act as a marker for high risk screening tests, the  
 CC difference in GBNE levels between malignant and non-malignant can also be  
 CC used to follow therapy for the treatment of known reproductive cancers.  
 XX Sequence 145 AA:

Query Match 98.3%; Score 764; DB 18; Length 145;  
 Best Local Similarity 98.6%; Pred. No. 6.2e-62;  
 Matches 138; Conservative 2; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 60  
 QY 62 DYRFESIRLPGCPGVNPNVSVYVALSCCALCKRRSTTDCGPKDHPKLTCDPRFQDSSS 121  
 DB 61 DYRFESIRLPGCPGVNPNVSVYVALSCCALCKRRSTTDCGPKDHPKLTCDPRFQDSSS 120  
 QY 122 SKAPPPSLPSRLPGSDT 141  
 DB 121 SKAPPPSLPSRLPGSDT 140

RESULT 42  
 AAW99512  
 ID AAW99512 standard; Protein: 165 AA.  
 AC AAW99512;  
 DT 08-JUN-1999 (first entry)  
 XX Glycoprotein hormone analogue hCG-beta-T42C.  
 XX Analogue: heterodimeric; glycoprotein hormone: hCG; hLH; hFSH; hTSH;  
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KW human follicle stimulating hormone; human thyroid stimulating hormone;  
 XX stability; primer; amplification; PCR; mutation.  
 OS Homo sapiens.  
 OS Synthetic.  
 XX WO9858957-A2.  
 XX 30-DEC-1998.  
 PD 25-JUN-1998; 98WO-US13070.  
 XX 25-JUN-1997; 97US-0050784.  
 PR 25-JUN-1997; 97US-0050784.  
 XX (ISTE ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 PA (MCIN-) MCINNIS P G.  
 XX Moyle WR;  
 XX WPT; 1999-081219/07.  
 DR New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 XX or hTSH, have an intersubunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability

XX Example 12; Page 89; 139pp; English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human luteinising hormone (LH), human follicle stimulating  
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 CC mutants, which are modified to contain an intersubunit disulphide bond,  
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 CC improved stability, the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutated hCG-beta subunit used for the generation of the  
 CC modified GPHs. The improved analogues are designed specifically to  
 CC reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer is likely to be stable and not susceptible to have  
 CC antigenic activity against them. The changes stabilise the GPH and prolong  
 CC the biological activities of the hormones. The analogues can have uses  
 XX as for the native GPHs.  
 XX Sequence 165 AA:

Query Match 98.3%; Score 764; DB 20; Length 165;  
 Best Local Similarity 99.3%; Pred. No. 7.1e-62;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 61  
 DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 80  
 QY 62 DYRFESIRLPGCPGVNPNVSVYVALSCCALCKRRSTTDCGPKDHPKLTCDPRFQDSSS 121  
 DB 81 DYRFESIRLPGCPGVNPNVSVYVALSCCALCKRRSTTDCGPKDHPKLTCDPRFQDSSS 140  
 QY 122 SKAPPPSLPSRLPGSDT 141  
 DB 141 SKAPPPSLPSRLPGSDT 160

RESULT 43  
 AAW99506  
 ID AAW99506 standard; Protein: 165 AA.  
 AC AAW99506;  
 DT 08-JUN-1999 (first entry)  
 XX Glycoprotein hormone analogue hCG-beta-W41C.  
 XX Analogue: heterodimeric; glycoprotein hormone: hCG; hLH; hFSH; hTSH;  
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KW human follicle stimulating hormone; human thyroid stimulating hormone;  
 KW stability; primer; amplification; PCR; mutation.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX WO9858957-A2.  
 XX 30-DEC-1998.  
 PD 25-JUN-1998; 98WO-US13070.  
 XX 25-JUN-1997; 97US-0050784.  
 PR 25-JUN-1997; 97US-0050784.  
 XX (ISTE ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 PA (MCIN-) MCINNIS P G.  
 XX Moyle WR;  
 XX WPT; 1999-081219/07.  
 DR New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 XX or hTSH, have an intersubunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability

PT or hTSH, have an inter-subunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability  
 XX Example 12: Page 89; 139pp; English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH), e.g. human chorionic gonadotropin  
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating  
 CC hormone (hFSH), which are modified to contain at least one functional  
 CC disulphide bond, between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 CC improved stability, the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutated hCG-beta subunit used for the generation of the  
 CC modified GPHs. The improved analogues are designed specifically to  
 CC reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and thereby creating greater likelihood that the dimer will be formed in vivo  
 CC agonistic activity on them. The analogues stabilise the GPHs and have  
 CC the biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX Sequence 165 AA;

Query Match 98.3%; Score 764; DB 20; Length 165;  
 Best Local Similarity 99.3%; Pred. No. 7.1e-62;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVEKSGCPVCTVNTTICAGYCPTRVYLOGVLPALPQVNCNR 61  
 DB 21 SKEPLRPRCPINATLAVEKSGCPVCTVNTTICAGYCPTRVYLOGVLPALPQVNCNR 80  
 QY 62 DVRFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGPKDHPDLPDPRFQDSSS 121  
 DB 81 DVRFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGPKDHPDLPDPRFQDSSS 140  
 QY 122 SKAPPSLPSPRLPGPSDT 141  
 DB 141 SKAPPSLPSPRLPGPSDT 160

RESULT 44  
 AAW99510  
 ID AAW99510 standard; Protein: 165 AA.  
 XX AC AAW99510;  
 XX DT 08-JUN-1999 (first entry)  
 XX DE Glycoprotein hormone analogue hCG-beta-798C.  
 XX KW Analogue: heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KW human follicle stimulating hormone; human thyroid stimulating hormone;  
 KW stability; primer; amplification; PCR; mutation.  
 XX OS Homo sapiens.  
 XX OS Synthetic.  
 XX XX WO9858957-A2.  
 XX XX 30-DEC-1998.  
 XX XX 25-JUN-1998; 98WO-US13070.  
 XX XX 25-JUN-1997; 97US-0050784.  
 XX XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 XX XX (MCIN-) MCINNIS P G.  
 XX XX Moyle WR;  
 XX XX WPI: 1999-081219/07.

XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 PT or hTSH, have an inter-subunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability  
 XX Example 12: Page 89; 139pp; English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH), e.g. human chorionic gonadotropin  
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating  
 CC hormone (hFSH), which are modified to contain at least one functional  
 CC disulphide bond, between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 CC improved stability, the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutated hCG-beta subunit used for the generation of the  
 CC modified GPHs. The improved analogues are designed specifically to  
 CC reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and thereby creating greater likelihood that the dimer will be formed in vivo  
 CC agonistic activity on them. The analogues stabilise the GPHs and have  
 CC the biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX Sequence 165 AA;

Query Match 98.3%; Score 764; DB 20; Length 165;  
 Best Local Similarity 99.3%; Pred. No. 7.1e-62;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVEKSGCPVCTVNTTICAGYCPTRVYLOGVLPALPQVNCNR 61  
 DB 21 SKEPLRPRCPINATLAVEKSGCPVCTVNTTICAGYCPTRVYLOGVLPALPQVNCNR 80  
 QY 62 DVRFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGPKDHPDLPDPRFQDSSS 121  
 DB 81 DVRFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGPKDHPDLPDPRFQDSSS 140  
 QY 122 SKAPPSLPSPRLPGPSDT 141  
 DB 141 SKAPPSLPSPRLPGPSDT 160

RESULT 45  
 AAW99511  
 ID AAW99511 standard; Protein: 165 AA.  
 XX AC AAW99511;  
 XX DT 08-JUN-1999 (first entry)  
 XX DE Glycoprotein hormone analogue hCG-beta-740C.  
 XX KW Analogue: heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KW human follicle stimulating hormone; human thyroid stimulating hormone;  
 KW stability; primer; amplification; PCR; mutation.  
 XX OS Homo sapiens.  
 XX OS Synthetic.  
 XX XX WO9858957-A2.  
 XX XX 30-DEC-1998.  
 XX XX 25-JUN-1998; 98WO-US13070.  
 XX XX 25-JUN-1997; 97US-0050784.  
 XX XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 XX XX (MCIN-) MCINNIS P G.  
 XX XX Moyle WR;

WPI; 1999-081219/07.

New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH or hTSH, have an intersubunit disulphide crosslink between the alpha- and beta-subunits to improve stability

Example 12: Page 89; 139pp: English.

The invention relates to the production of analogues of a heterodimeric subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin (hCG), human luteinising hormone (hLH), human follicle stimulating hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional mutants, which are modified to contain an intersubunit disulphide bond, between an alpha-subunit cysteine and a beta-subunit cysteine, for improved stability, the analogue retaining at least a portion of the biological activity and antigenic epitopes. This sequence represents a mutated hCG-beta subunit designed to be specifically to modified GPHs. The improved analogues are designed specifically to reduce perturbation of the 3-dimensional structure of the hormone, thereby creating greater likelihood that the dimer will be formed in vivo and the formed dimer will have affinity for the native receptors and agonistic activity on them. The changes stabilise the GPHs and prolong the biological activities of the hormones. The analogues can have uses as for the native GPHs.

Sequence 165 AA:

RESULT 46  
AAU04613  
ID AAU04613 standard; Protein: 181 AA.

PR 09-MAY-1997; 97US-0853524.  
XX  
XX (UNIW ) UNIV WASHINGTON.  
PA  
XX  
XX Boime I, Moyle WR;  
PI  
XX  
XX WPI; 2001-424301/45.  
DR N-PSDB; AAS08507.  
DR

XX New single chain forms of the glycoprotein hormone quartet useful for  
PT generating antibodies specifically immunoreactive with the new  
PT compounds, in treating infertility, or as aids for in vivo  
PT fertilization techniques -

XX Example 16; Fig 16; 86pp: English.

XX The sequence represents the amino acid sequence of gonadotropin analogue  
CC beta subunit lacking oligosaccharide binding sites. The oligosaccharide  
CC binding sites are removed in order to reduce the efficacy of the  
CC gonadotropin hormone in the treatment of infertility. The glycoprotein  
CC hormone analogue is useful for generating antibodies specifically  
CC immunoreactive with new compounds, as a substitute for the heterodimeric  
CC forms of the hormones, in the treatment of infertility, as an aid for in  
CC vivo fertilisation techniques, and in other therapeutic methods  
CC associated with the native hormone. The amino acid sequence is further  
CC modified to contain a single beta-terminus, a single beta-terminus as a  
CC diagnostic tool to detect the presence of antibodies with respect to the  
CC native proteins in the biological samples, as a control reagent in assay  
CC kits for assessing the levels of these hormones in various samples, and  
CC in detecting and purifying receptors to which the native hormones bind.  
CC The single chain forms of the heterodimers or homodimers have the  
CC following advantages over their dimeric forms: they are more stable,  
CC problems of recombinant production are reduced since only a single gene  
CC is needed to transcribe, translate and process, they provide an alternate  
CC form thus permitting fine tuning of activity levels and of in vivo half  
CC lives. Single chain forms are unique starting materials for identifying  
CC truncated forms with the activity of the dimer. The linkage between the  
CC subunits permits the protein to be engineered without disturbing the  
CC overall folding of the protein.

XX Sequence 181 AA:

XX

Query Match	98.3%	Score 764	DB 22	Length 181
Best Local Similarity	99.3%	Pred. No. 7.8e-62		
Matches 139	Conservative 0	Mismatches 1	Indels 0	Gaps 0

RESULT 47  
AAE04485  
ID AAE04485 standard; Protein: 181 AA.  
XX  
AC AAE04485;

XX Homo sapiens.  
OS Synthetic.  
XX USG238890-B1.  
XX 29-MAY-2001.  
XX 25-AUG-1997; 97US-0918288.  
XX 18-FEB-1994; 94US-0199382.  
XX 12-AUG-1994; 94US-0289396.  
XX 22-SEP-1994; 94US-0310590.  
XX 04-NOV-1994; 94US-0334628.  
XX 07-DEC-1994; 94US-0351591.  
XX 07-JUN-1995; 95US-0475049.  
XX 09-MAY-1997; 97US-0853524.  
XX (UNIW ) UNIV WASHINGTON.  
XX  
XX Bolme I, Moyle WR.  
XX WPI; 2001-366474/38.  
XX N-PSDB; AAD08807.

New DNA or RNA encoding single chain protein useful in treating infertility, as aids in vitro fertilization techniques, or other therapeutic methods associated with the native hormones -  
Example 16; Fig 16; 87pp; English.

The invention relates to human single chain forms of the glycoprotein hormone quartet which is an agonist or antagonist of luteinizing hormone (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers having identical alpha subunits and differing beta subunits. The agonist forms of single chain hormones are used in treating infertility, as aids in vitro fertilization techniques, and other therapeutic methods associated with the native hormones. The single chain hormones are useful as agonists or antagonists of the heterodimeric hormones. They are used to detect the presence of antibodies specific to the single chain hormones in biological samples, as control reagents in assay kits for assessing the levels of these hormones in various samples, in detecting and purifying receptors to which the native hormones bind. The single chain hormones are also used in affinity chromatographic preparation of receptors or antihormone antibodies. They are used as purification tools for isolation of subsequent preparations of these materials and to monitor levels of single chain hormones administered as drugs. The single chain glycoproteins are used to generate antibodies specifically immunoreactive with these new compounds, as substitutes for the heterodimeric forms of hormones. The present sequence is human single chain gonadotropin beta subunit. This beta-subunit is used for constructing fusion protein analogs 1a-10a. The analogs serve as useful starting compounds for template directed vaccine design and for the development of hormone-specific vaccines for use in humans.

Query Match 98.3%; Score 764; DB 22; Length 181;  
Best Local Similarity 99.3%; Pred. No. 7.8e-62;  
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
QY 2 SKEPLPRCPINATLAVKESGCVITVTTCAGYCPPTWRLVQGVLPALPOVYCNTR 61  
DB 21 SKEPLPRCPINATLAVKESGCVITVTTCAGYCPPTWRLVQGVLPALPOVYCNTR 80  
QY 62 DVRFESIRLPGCGVNPVYVAVLSQCALCRSTTDCGPKDHPHLCDDPRPDSSS 121  
DB 81 DVRFESIRLPGCGVNPVYVAVLSQCALCRSTTDCGPKDHPHLCDDPRPDSSS 140  
QY 122 SKAPPSLPSPSLRPGSDT 141  
XX

DB 141 SKAPPSLPSPSLRPGSDT 160  
RESULT 48  
AAR15174  
XX AAR15174 standard; Protein; 145 AA.  
XX AAR15174;  
XX 11-FEB-1992 (first entry)  
XX hCG histidine substitution mutant, G6.  
XX Glycoprotein hormone; human chorionic gonadotropin; disulphide.  
XX Homo sapiens.  
XX MO9116922-A.  
XX 14-NOV-1991.  
XX 07-MAY-1991; 91WO-US03162.  
XX 08-MAY-1990; 90US-0520703.  
XX (UYNE-) UNIV MED NEW JERSEY.  
XX Campbell RK, Moyle WR;  
XX WPI; 1991-353528/48.  
XX New glyco-protein hormone analogues - for inducing fertility as immuno-castration agents, for suppressing reproductive system development and as immuno-contragestive vaccines.

Table VIII; Page 67; 94pp; English.  
XX The sequence is an analogue of mature hCG beta subunit having residue 40 replaced by a histidine residue. This introduces an additional disulphide bond. This can be used to show that mutagenesis has not altered the "normal" disulphide pattern of analogues, and for examining protein folding.  
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 145 AA;  
Query Match 98.2%; Score 763; DB 12; Length 145;  
Best Local Similarity 99.3%; Pred. No. 7.6e-62;  
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
QY 2 SKEPLPRCPINATLAVKESGCVITVTTCAGYCPPTWRLVQGVLPALPOVYCNTR 61  
DB 1 SKEPLPRCPINATLAVKESGCVITVTTCAGYCPPTWRLVQGVLPALPOVYCNTR 60  
QY 62 DVRFESIRLPGCGVNPVYVAVLSQCALCRSTTDCGPKDHPHLCDDPRPDSSS 121  
DB 61 DVRFESIRLPGCGVNPVYVAVLSQCALCRSTTDCGPKDHPHLCDDPRPDSSS 120  
QY 122 SKAPPSLPSPSLRPGSDT 141  
XX

RESULT 49  
AAR15170  
XX AAR15170 standard; Protein; 145 AA.  
XX AAR15170;  
XX 11-FEB-1992 (first entry)  
XX hCG methionine substitution mutant, G2.

XX KW Glycoprotein hormone; human chorionic gonadotropin; disulphide.  
 XX XS Homo sapiens.  
 XX XN  
 XX PN W09116922-A.  
 XX PD 14-NOV-1991.  
 XX PF 07-MAY-1991; 91WO-US03162.  
 XX PR 08-MAY-1990; 90US-0520703.  
 XX PA (UTNE-) UNIV MED NEW JERSEY.  
 XX XI Campbell RK, Moyle WR;  
 XX DR WPI; 1991-353528/48.  
 XX XX  
 XX PT New glyco-protein hormone analogues - for inducing fertility as  
 XX PT immuno-castration agents, for suppressing reproductive system  
 XX PT development and as immuno-contragestive vaccines.  
 XX PS Table VIII; Page 67; 94pp: English.  
 XX XX  
 XX CC The sequence is an analogue of mature hCG beta subunit having  
 XX CC additional cleavage site for CNBr. This introduces an  
 XX CC disulphide bond. This can be used to show that mutagenesis has  
 XX CC not altered the "normal" disulphide pattern of analogues, and for  
 XX CC examining protein folding.  
 XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX SQ  
 XX Sequence 145 AA:  
 Query Match 98.1%; Score 762; DB 12; Length 145;  
 Seq. Local Similarity 99.3%; Pred. No. 9.4e-62;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCRPINATLAVEKGCPCVITVTTICAGTCPTMTVRLQGLPALPQVVCNVR 61  
 DB 1 SKEPLRPRCRPINATLAVEKGCPCVITVTTICAGTCPTMTVRLQGLPALPQVVCNVR 60  
 OY 62 DVRESIRLPGCRPGVNPVSYVALSCQCALCRRTTDCGGPKDHPDLPDTPDQSS 121  
 DB 61 DVRESIRLPGCRPGVNPVSYVALSCQCALCRRTTDCGGPKDHPDLPDTPDQSS 120  
 OY 122 SKAPPSLSPSLPSPSDT 141  
 DB 121 SKAPPSLSPSLPSPSDT 140  
 DB 121 SKAPPSLSPSLPSPSDT 140  
 RESULT 50  
 AAM99545  
 ID AAM99545 standard; Protein: 165 AA.  
 AC AAM99545;  
 XX XX  
 XX XX 08-JUN-1999 (first entry)  
 XX DE hCG-beta analogue hCG-beta-R8C.  
 KW Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH;  
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KW human follicle stimulating hormone; human thyroid stimulating hormone;  
 XX stability; primer; amplification; PCR; mutation.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX W09858957-A2.  
 XX XX  
 XX PD 30-DEC-1998.

XX PF 25-JUN-1998; 98WO-US13070.  
 XX PR 25-JUN-1997; 97US-0050784.  
 XX XX  
 XX PA (ISRF) ARS APPLIED RES SYSTEMS HOLDING NV.  
 XX PA (ACIN-) MCINNIS F G.  
 XX PI Moyle WR;  
 XX DR WPI; 1999-081219/07.  
 XX XX  
 XX PT New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 XX PT or hTSH, have an intersubunit disulphide crosslink between the  
 XX PT alpha- and beta-subunits to improve stability  
 XX PS  
 XX DR Disclosure; Fig 348; 139pp: English.  
 XX XX  
 XX CC The invention relates to the production of analogues of a heterodimeric  
 XX CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 XX CC (hCG), human luteinising hormone (hLH), human follicle stimulating  
 XX CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 XX CC mutants, which are modified to contain an intersubunit disulphide bond,  
 XX CC between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 XX CC improved stability, the analogue retaining at least a portion of the  
 XX CC bioactivity for the corresponding native GPH receptor. This sequence  
 XX CC represents a mutant hCG-beta subunit used for the generation of orally  
 XX CC active analogues. The analogues are modified to contain a disulphide bond  
 XX CC to reduce perturbation of the 3-dimensional structure of the hormone,  
 XX CC thereby creating greater likelihood that the dimer will be formed in vivo  
 XX CC and the formed dimer will have affinity for the native receptors and have  
 XX CC agonistic activity on them. The changes stabilise the GPHs and prolong  
 XX CC the biological activities of the hormones. The analogues can have uses  
 XX CC as for the native GPHs.  
 XX SQ  
 XX Sequence 165 AA:  
 Query Match 98.1%; Score 762; DB 20; Length 165;  
 Seq. Local Similarity 99.3%; Pred. No. 1.1e-61;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCRPINATLAVEKGCPCVITVTTICAGTCPTMTVRLQGLPALPQVVCNVR 61  
 DB 21 SKEPLRPRCRPINATLAVEKGCPCVITVTTICAGTCPTMTVRLQGLPALPQVVCNVR 80  
 OY 62 DVRESIRLPGCRPGVNPVSYVALSCQCALCRRTTDCGGPKDHPDLPDTPDQSS 121  
 DB 81 DVRESIRLPGCRPGVNPVSYVALSCQCALCRRTTDCGGPKDHPDLPDTPDQSS 140  
 OY 122 SKAPPSLSPSLPSPSDT 141  
 DB 141 SKAPPSLSPSLPSPSDT 160  
 RESULT 51  
 AAM99513  
 ID AAM99513 standard; Protein: 165 AA.  
 AC AAM99513;  
 XX XX  
 XX XX 08-JUN-1999 (first entry)  
 XX DE Glycoprotein hormone analogue hCG-beta-Q46C.  
 KW Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KW human follicle stimulating hormone; human thyroid stimulating hormone;  
 XX stability; primer; amplification; PCR; mutation.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX W09858957-A2.  
 XX XX  
 XX PD W09858957-A2.

XX	30-DEC-1998.
XX	
PD	
XX	
XX	25-JUN-1998:
PF	98WO-US13070.
XX	
XX	25-JUN-1997:
PR	97US-0050784.
XX	
XX	(ISTF ) ARG APPLIED RES SYSTEMS HOLDING NV.
PA	(MCIN.) MCINNIS P G.
XX	
PI	Moyle WR;
XX	
XX	WPI; 1999-081219/07.
DR	
XX	
PT	New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
PT	or hTSH, have an intersubunit disulphide crosslink between the
PT	alpha- and beta-subunits to improve stability
XX	
XX	Example 12; Page 89; 139pp; English.
PS	
CC	The invention relates to the production of analogues of a heterodimeric
CC	subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
CC	(hCG), human luteinising hormone (hLH), human follicle stimulating
CC	hormone (hFSH); human thyroid stimulating hormone (hTSH), and functional
CC	mimetics, which are modified to contain an intersubunit disulphide bond,
CC	between an alpha-subunit cysteine and a beta-subunit cysteine, for
CC	increased stability and increased biological activity. The invention also
CC	discloses a method of producing such analogues by covalently linking the
CC	bioactivity for the corresponding native GPH receptor. The invention also
CC	represents a mutated hCG-beta subunit used for the generation of the
CC	modified GPHs. The improved analogues are designed specifically to
CC	reduce perturbation of the 3-dimensional structure of the hormone,
CC	and thereby creating greater likelihood that the dimer will be formed in vivo
CC	and the formed dimer will have affinity for the native receptors and have
CC	agonistic activity on them. The changes stabilise the GPHs and prolong
CC	the biological activities of the hormones. The analogues can have uses
CC	as for the native GPHs.
XX	
SQ	Sequence 165 AA;
XX	
Query Match	98.1%; Score 762; DB 20; Length 165;
Best Local Similarity	99.3%; Pred. No. 1.1e-61;
Matches 139; Conservative	0; Mismatches 1; Indels 0; Gaps 0;
QY	2 SKEPLAPRCIPNATLAVEKGGCVGTIVNTICAGTCCTPVRVLGVLPALDPVVCNFR 61
DB	
QY	21 SKEPLAPRCIPNATLAVEKGGCPVCTIVNTICAGTCCTPVRVLGVLPALDPVVCNFR 80
DB	
QY	62 DVAFESIRLGPCRGVPVSVYVALVSQCACLRSTTDCGGPKDHPLTCDPDFRQDSSS 121
DB	
QY	81 DVAFESIRLGPCRGVPVSVYVALVSQCACLRSTTDCGGPKDHPLTCDPDFRQDSSS 140
DB	
QY	122 SKAPPSPSLPSRLPGSDT 141
DB	
QY	.141 SKAPPSPSLPSRLPGSDT 160
DB	
RESULT 52	
AAMW99515	
ID	AAMW99515 standard; Protein: 165 AA.
XX	
XX	AAMW99515;
DT	
XX	
DT	08-JUN-1999 (first entry)
DE	
DE	Glycoprotein hormone analogue hCG-beta-054C.
KX	
KW	Analogue: heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
KW	human chorionic gonadotropin; human luteinizing hormone; disulphide bond;
KW	human follicle stimulating hormone; human thyroid stimulating hormone;
KW	stability; primer; amplification; PCR; mutation.
OS	Homo sapiens.
OS	Synthetic.

XX	W09858957-A2.
XX	
PX	30-DEC-1998.
PD	
PX	25-JUN-1998; 98WO-US13070.
PF	
PX	25-JUN-1997; 97US-0050784.
PR	
PA	(TSRF ) ARS APPLIED RES SYSTEMS HOLDING NV.
PA	(ACTIN-) MCINNIS F G.
P1	Moyle WR:
DR	WPI: 1999-081219/07.
DR	
PT	New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
PT	or hTSH, have an intersubunit disulphide crosslink between the
PT	alpha- and beta-subunits to improve stability
PX	
PX	Example 12; Page 89; 139pp; English.
CC	The invention relates to the production of analogues of a heterodimeric
CC	subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin
CC	(hCG), human luteinising hormone (hLH), human follicle stimulating
CC	hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
CC	mutelins, which are modified to contain an intersubunit disulphide bond,
CC	wherein one subunit cysteine and a beta-subunit cysteine form the
CC	improved stability crosslink.
CC	Improved stability is achieved by the presence of the
CC	bioactivity for the corresponding native GPH receptor. This sequence
CC	represents a mutated hCG-beta subunit used for the generation of the
CC	modified GPHs. The improved analogues are designed specifically to
CC	reduce perturbation of the 3-dimensional structure of the hormone,
CC	thereby creating greater likelihood that the dimer will be formed <i>in vivo</i>
CC	and the formed dimer will have affinity for the native receptors and have
CC	agonistic activity on them. The changes stabilises the GPHs and prolong
CC	the biological half-lives of the hormones. The analogues can have uses
CC	as for the native GPHs.
SQ	Sequence 165 AA:
Query Match	98.1%; Score 762; DB 20; Length 165;
Best Local Similarity	99.3%; Pred. No. 1.1e-61;
Matches 139; Conservative	0; Mismatches 1; Indels 0; Gaps 0;
QY	2 SKEPRLPCRNINATLAVEKGGPCIVITNTTCAGCTPMTVRVLOGVLPAALPVCCNTR 61
Db	21 SKELPLRCPRI NATLAVEKGGPCIVITNTTCAGCTPMTVRVLOGVLPAALPVCCNTR 80
QY	62 DYRESEIRLPGCRGNVPVVYVALVSCQCALCRSTTTDCGGPKDHPILTCDDPRFDSSS 121
Db	81 DYRESEIRLPGCRGNVPVVYVALVSCQCALCRSTTTDCGGPKDHPILTCDDPRFDSSS 140
QY	122 SKANPSLPSPSRLLPGSDPT 141
Db	141 SKAPPSLPSPSRLLPGSDPT 160
RESULT 53	
AAM99534	
ID	AAM99534 standard; Protein; 165 AA.
NC	
AC	AAM99534;
DT	08-JUN-1999 (first entry)
DE	hCG-beta analogue hCG-beta'-Y37C.
XX	Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
KW	human chorionic gonadotropin; human luteinising hormone; disulphide bond;
KW	human follicle stimulating hormone; human thyroid stimulating hormone;
XX	stability; primer; amplification; PCR; mutation.

OS Homo sapiens.  
 OS Synthetic.  
 XX WO9858957-A2.  
 XX 30-DEC-1998.  
 XX 25-JUN-1998: 98MO-US13070.  
 XX 25-JUN-1997: 97US-0050784.  
 XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 XX (MCIN-) MCINNIS P G.  
 XX Moyle WR;  
 XX WPI: 1999-081219/07.  
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 PT or hTSH, have an intersubunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability  
 XX Disclosure: Fig 4B; 139pp: English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating  
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 CC mutants, which are modified to contain an intersubunit disulphide bond,  
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 CC improved stability, the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutant hCG-beta subunit used for the generation of  
 CC the modified GPHs. The improved analogues are designed specifically  
 CC to reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer will have affinity for the native receptors and have  
 CC agonistic activity on them. The changes stabilise the GPHs and prolong  
 CC the biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX Sequence 165 AA:  
 SQ Query Match 97.9%; Score 761; DB 20; Length 165;  
 Best Local Similarity 99.3%; Pred. No. 1.3e-61;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 Qy 2 SKEPLRRCRPI NATLAVERECPCVITNTTICAGCTPTTRVVGSLPALPQVNCNR 61  
 Db 21 SKEPLRRCRPI NATLAVERECPCVITNTTICAGCTPTTRVVGSLPALPQVNCNR 80  
 Qy 62 DYRFESIRLPCRGVNPVSYAVALSQCACALCRSTTDCGGPKDRLPTCDPRQDSSS 121  
 Db 81 DYRFESIRLPCRGVNPVSYAVALSQCACALCRSTTDCGGPKDRLPTCDPRQDSSS 140  
 Qy 122 SKAPPSLPSPSLRPGSDT 141  
 Db 141 SKAPPSLPSPSLRPGSDT 160

RESULT 54  
 AAR86247  
 ID AAR9538 standard; Protein; 165 AA.  
 XX AAR9538;  
 XX AAR9538;  
 XX 08-JUN-1999 (first entry)  
 XX hCG-beta analogue hCG-beta'-D99C.  
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 XX human follicle stimulating hormone; human thyroid stimulating hormone;

KW stability; primer; amplification; PCR; mutation.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX WO9858957-A2.  
 XX 30-DEC-1998.  
 XX 25-JUN-1998: 98MO-US13070.  
 XX 25-JUN-1997: 97US-0050784.  
 XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 XX (MCIN-) MCINNIS P G.  
 XX Moyle WR;  
 XX WPI: 1999-081219/07.  
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 PT or hTSH, have an intersubunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability  
 XX Disclosure: Fig 15B; 139pp: English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating  
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 CC mutants, which are modified to contain an intersubunit disulphide bond,  
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 CC improved stability, the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutant hCG-beta subunit used for the generation of  
 CC the modified GPHs. The improved analogues are designed specifically  
 CC to reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer will have affinity for the native receptors and have  
 CC agonistic activity on them. The changes stabilise the GPHs and prolong  
 CC the biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX Sequence 165 AA:  
 SQ Query Match 97.9%; Score 761; DB 20; Length 165;  
 Best Local Similarity 99.3%; Pred. No. 1.3e-61;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 Qy 2 SKEPLRRCRPI NATLAVERECPCVITNTTICAGCTPTTRVVGSLPALPQVNCNR 61  
 Db 21 SKEPLRRCRPI NATLAVERECPCVITNTTICAGCTPTTRVVGSLPALPQVNCNR 80  
 Qy 62 DYRFESIRLPCRGVNPVSYAVALSQCACALCRSTTDCGGPKDRLPTCDPRQDSSS 121  
 Db 81 DYRFESIRLPCRGVNPVSYAVALSQCACALCRSTTDCGGPKDRLPTCDPRQDSSS 140  
 Qy 122 SKAPPSLPSPSLRPGSDT 141  
 Db 141 SKAPPSLPSPSLRPGSDT 160

RESULT 55  
 AAR86247  
 ID AAR86247 standard; Protein; 265 AA.  
 XX AAR86247;  
 XX AAR86247;  
 XX 26-APR-1996 (first entry)  
 XX Single chain gonadotropin analogue 1.  
 XX Single chain gonadotropin; human chorionic gonadotropin; hCG;

alpha; beta; subunit; analogue; glycoprotein hormone; fertility; inhibit; stimulate; increase; lutropin; lutetising hormone; LH; follicle stimulating hormone; FSH; vaccine; contraceptive.

Synthetic.

Key Location/Qualifiers  
 Peptide 1..20  
 Region 21..165  
 /label= hCG\_beta\_subunit\_(1-145)  
 Misc-difference 70  
 /note= "Arg corresponds to CCG codon"  
 Region 166..173  
 /label= linker  
 Region 174..265  
 /label= Gonadotropin\_alpha\_subunit\_(1-92)  
 W09522340-A1.  
 24-AUG-1995.  
 17-FEB-1995; 95WO-US02067.  
 18-FEB-1994; 94US-0199382.  
 (SENS-) SENS1-TEST.  
 Moyle WR;  
 WPI: 1995-302553/39.  
 N-PSDB: AAT03212.  
 Methods for altering fertility in mammals, esp. humans - e.g. stimulating fertility by reducing the activity and/or levels of circulating glyco-protein hormones having lutropin activity

Example 12 and Claim 39; Fig 6; 102pp: English.

Analogue 1 (human CG-beta(1-145)-linker-human CG-alpha(1-92)) is a specific example of a single chain gonadotropin having a chorionic gonadotropin (CG) beta-subunit at the N-terminus and a CG alpha-subunit at the C-terminus, joined by a linker of 1-16 amino acids. The analogue has lutetising hormone (lutropin) activity and is useful for inducing ovulation and increasing male fertility.

Sequence 265 AA:  
 Query Match 97.94; Score 761; DB 16; Length 265;  
 Best Local Similarity 99.38; Pred No. 2 le-61;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLPRCPRIINATLAVEKECPVCITVTTCAGYCTPTMTVRLQGVLPALPQVVCNTR 61  
 DB 21 SKEPLPRCPRIINATLAVEKECPVCITVTTCAGYCTPTMTVRLQGVLPALPQVVCNTR 80  
 QY 62 DVRFESIRLPGCPRGVNPVYVAVALSCQCALCRSTTDCGPKDHPDTCDDPRFQDSSS 121  
 DB 81 DVRFESIRLPGCPRGVNPVYVAVALSCQCALCRSTTDCGPKDHPDTCDDPRFQDSSS 140  
 QY 122 SKAPPSLPSPRLPQSDT 141  
 DB 141 SKAPPSLPSPRLPQSDT 160

RESULT 56  
 AAR86259 standard; Protein: 265 AA.  
 AC AAR86259;  
 DC 08-MAY-1996 (first entry)

DE XX Partially deglycosylated analog chain gonadotropin analogue 1a.  
 KW Single chain gonadotropin; human chorionic gonadotropin; hCG;  
 KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;  
 KW inhibit; stimulate; increase; lutropin; lutetising hormone; LH;  
 KW follicle stimulating hormone; FSH; vaccine; contraceptive.  
 XX Synthetic.  
 OS Key Location/Qualifiers  
 PE Peptide 1..20  
 FT /label= leader  
 FT Region 21..165  
 FT /label= hCG\_beta\_subunit\_(1-145)  
 FT Misc-difference 70  
 FT /note= "Arg corresponds to CCG codon"  
 FT Region 166..173  
 FT /label= linker  
 FT Region 174..265  
 FT /label= Gonadotropin\_alpha\_subunit\_(1-92)  
 FT Misc-difference 23  
 FT /note= "wild-type Asn at position 52 of the alpha-subunit has been replaced by Gln to remove a glycosylation site"  
 FT Misc-difference 251  
 FT /note= "wild-type Asn at position 78 of the alpha-subunit has been replaced by Gln to remove a glycosylation site"  
 W09522340-A1.  
 24-AUG-1995.  
 17-FEB-1995; 95WO-US02067.  
 18-FEB-1994; 94US-0199382.  
 (SENS-) SENS1-TEST.  
 Moyle WR;  
 WPI: 1995-302553/39.  
 N-PSDB: AAT03243.  
 Methods for altering fertility in mammals, esp. humans - e.g. stimulating fertility by reducing the activity and/or levels of circulating glyco-protein hormones having lutropin activity

Example 23; Fig 18; 102pp: English.

Analogue 1a (human CG-beta(1-145)-linker-human CG-alpha(1-92)) is a specific example of a single chain gonadotropin having a chorionic gonadotropin (CG) beta-subunit at the N-terminus and a CG alpha-subunit at the C-terminus, joined by a linker of 1-16 amino acids. The analogue 1a was derived from analogue 1 by removing the two glycosylation sites from the alpha-subunit. The analogue has anti-lutetising hormone (lutropin) activity and can be used for facilitating ovulation, terminating pregnancy and reducing androgen secretion.

Sequence 265 AA:  
 Query Match 97.94; Score 761; DB 16; Length 265;  
 Best Local Similarity 99.38; Pred No. 2 le-61;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLPRCPRIINATLAVEKECPVCITVTTCAGYCTPTMTVRLQGVLPALPQVVCNTR 61  
 DB 21 SKEPLPRCPRIINATLAVEKECPVCITVTTCAGYCTPTMTVRLQGVLPALPQVVCNTR 80  
 QY 62 DVRFESIRLPGCPRGVNPVYVAVALSCQCALCRSTTDCGPKDHPDTCDDPRFQDSSS 121  
 DB 81 DVRFESIRLPGCPRGVNPVYVAVALSCQCALCRSTTDCGPKDHPDTCDDPRFQDSSS 140



```
QY 122 SKAPPPSLPSRLPGSDT 141
DB 141 SKAPPPSLPSRLPGSDT 160

RESULT 57
AAR15178
ID AAR15178 standard; Protein: 144 AA.
AC AAR15178;
XX
XX 11-FEB-1992 (first entry)
DT
XX hCG histidine substitution mutant, G10.
DB
XX
XX Glycoprotein hormone; human chorionic gonadotropin; disulphide.
XX
XX Homo sapiens.
XX
XX WO9116922-A.
XX
XX 14-NOV-1991.
XX
XX 07-MAY-1991; 91WO-US03162.
XX
XX 08-MAY-1990; 90US-0520703.
XX
XX (UYNE-) UNIV MED NEW JERSEY.
XX
XX Campbell RK, Moyle WR;
PI
XX
XX WPI: 1991-353528/48.
XX
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-contragestive agents, for suppressing reproductive system
XX development and as immuno-contragestive vaccines.
XX
XX Table VIII: Page 67; 94pp: English.
XX
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 139-144 replaced by histidine residues. This introduces
XX additional cleavage sites for CNBr, useful for determining the
XX disulphide bonds. This can be used to show that mutagenesis has
XX not altered the "normal" disulphide pattern of analogues, and for
XX examining protein folding.
XX
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX
XX Sequence 144 AA;
XX
XX Query Match 97.7%; Score 759; DB 12; Length 144;
XX Best Local Similarity 100.0%; Pred. No. 1.7e-61;
XX Matches 138; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
QY 2 SKEPLPRCRPINATLAVEKGCPCVTITTCAGYCTMTVRVLSQVLPALPQVVCNRYR 61
DB 1 SKEPLPRCRPINATLAVEKGCPCVTITTCAGYCTMTVRVLSQVLPALPQVVCNRYR 60
XX
QY 62 DYRFESIRLPCPCPGVNPVSYAVALSQCACLCRRSTTDCGGPKDHPRLTCDPRFQSSS 121
DB 61 DYRFESIRLPCPCPGVNPVSYAVALSQCACLCRRSTTDCGGPKDHPRLTCDPRFQSSS 120
XX
QY 122 SKAPPPSLPSRLPGPS 139
DB 121 SKAPPPSLPSRLPGPS 138
XX
RESULT 58
AAR15103
ID AAR15103 standard; Protein: 145 AA.
AC AAR15103;
XX
XX hCG/hLH chimera, A5.
XX
XX Glycoprotein hormone; immuno-castration;
XX immuno-contragestive; vaccine; human chorionic gonadotropin;
XX luteinising hormone; LH; CG.
XX
XX Homo sapiens.
```

```
DT 11-FEB-1992 (first entry)
XX
XX hCG/hLH chimera, D7.
XX
XX Glycoprotein hormone; immuno-castration;
XX immuno-contragestive; vaccine; human chorionic gonadotropin;
XX luteinising hormone; LH; CG; Bovine.
XX
XX Homo sapiens.
XX
XX Bos taurus.
XX
XX WO9116922-A.
XX
XX 14-NOV-1991.
XX
XX 07-MAY-1991; 91WO-US03162.
XX
XX 08-MAY-1990; 90US-0520703.
XX
XX (UYNE-) UNIV MED NEW JERSEY.
XX
XX Campbell RK, Moyle WR;
PI
XX
XX WPI: 1991-353528/48.
XX
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-contragestive agents, for suppressing reproductive system
XX development and as immuno-contragestive vaccines.
XX
XX Table IV: Page 63; 94pp: English.
XX
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 95 and 97 replaced by the corresponding residues in the
XX bovine LH protein. The chimeric hormone may be useful for identi-
XX fying residues which are important for binding to the human receptor
XX and may also have applications as an immunogen, agonist and/or ant-
XX agonist.
XX
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX
XX Sequence 145 AA;
XX
XX Query Match 97.7%; Score 759; DB 12; Length 145;
XX Best Local Similarity 98.6%; Pred. No. 1.8e-61;
XX Matches 138; Conservative 1; Mismatches 1; Indels 0; Gaps 0;
XX
QY 2 SKEPLPRCRPINATLAVEKGCPCVTITTCAGYCTMTVRVLSQVLPALPQVVCNRYR 61
DB 1 SKEPLPRCRPINATLAVEKGCPCVTITTCAGYCTMTVRVLSQVLPALPQVVCNRYR 60
XX
QY 62 DYRFESIRLPCPCPGVNPVSYAVALSQCACLCRRSTTDCGGPKDHPRLTCDPRFQSSS 121
DB 61 DYRFESIRLPCPCPGVNPVSYAVALSQCACLCRRSTTDCGGPKDHPRLTCDPRFQSSS 120
XX
QY 122 SKAPPPSLPSRLPGPSDT 141
DB 121 SKAPPPSLPSRLPGPSDT 140
XX
RESULT 59
AAR15120
ID AAR15120 standard; Protein: 145 AA.
AC AAR15120;
XX
XX 11-FEB-1992 (first entry)
DT
XX
XX hCG/hLH chimera, A5.
XX
XX Glycoprotein hormone; immuno-castration;
XX immuno-contragestive; vaccine; human chorionic gonadotropin;
XX luteinising hormone; LH; CG.
XX
XX Homo sapiens.
```

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XX PN W09116922-A.
XX PD 14-NOV-1991.
XX PR 07-MAY-1991; 91WO-US03162.
XX PR 08-MAY-1990; 90US-0520703.
XX PA (UYNE-) UNIV MED NEW JERSEY.
XX PI Campbell RK, Moyle WR;
XX DR WPI; 1991-353528/48.
XX PT New glyco-protein hormone analogues - for inducing fertility as
XX PT immuno-castration agents, for suppressing reproductive system
XX PT development and as immuno-contragestive vaccines.
XX PS Table VI; Page 65; 94pp; English.
XX CC The sequence is an analogue of mature hCG beta subunit having
XX CC residues 47, and 51 replaced by the corresponding residues in the
XX CC human LH protein. The chimeric hormone may be useful in the
XX CC treatment of infertility in men and women and the promotion of
XX CC fertility in male and female animals.
XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX SQ Sequence 145 AA;
XX Query Match 97.7%; Score 759; DB 12; Length 145;
XX Beat Local Similarity 98.6%; Pred. No. 1.8e-61;
XX Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
OY 2 SKEPLRPRCPINATLAVEREGCPVCITVNTTICAGTCPTMTVRVQLGVLPQVYCNR 61
DB 1 SKEPLRPRCPINATLAVEREGCPVCITVNTTICAGTCPTMTVRVQLGVLPQVYCNR 60
OY 62 DVFRESIRLPCPGVNPVYVAVALSCQCALCRSTTDCGPGKHPLTCDPRDSSS 121
DB 61 DVFRESIRLPCPGVNPVYVAVALSCQCALCRSTTDCGPGKHPLTCDPRDSSS 120
OY 122 SKAPPPSLPSRLPGSDT 141
DB 121 SKAPPPSLPSRLPGSDT 140
RESULT 60
AAR15175
ID AAR15175 standard; Protein; 147 AA.
XX AC AAR15175;
XX DT 11-FEB-1992 (first entry)
XX DE hCG insertion mutant, G7.
XX KW Glycoprotein hormone; human chorionic gonadotropin; disulphide.
XX OS Homo sapiens.
XX PN W09116922-A.
XX PD 14-NOV-1991.
XX PR 07-MAY-1991; 91WO-US03162.
XX PR 08-MAY-1990; 90US-0520703.
XX PA (UYNE-) UNIV MED NEW JERSEY.
XX PI Campbell RK, Moyle WR;
XX DR WPI; 1991-353528/48.
XX PT New glyco-protein hormone analogues - for inducing fertility as
XX PT immuno-castration agents, for suppressing reproductive system
XX PT development and as immuno-contragestive vaccines.
XX PS Table VI; Page 65; 94pp; English.
XX CC The sequence is an analogue of mature hCG beta subunit having
XX CC residues 47, and 51 replaced by the corresponding residues in the
XX CC human LH protein. The chimeric hormone may be useful in the
XX CC treatment of infertility in men and women and the promotion of
XX CC fertility in male and female animals.
XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX SQ Sequence 145 AA;
XX Query Match 97.7%; Score 759; DB 12; Length 145;
XX Beat Local Similarity 98.6%; Pred. No. 1.8e-61;
XX Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
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DR WPI; 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
XX PT immuno-castration agents, for suppressing reproductive system
XX PT development and as immuno-contragestive vaccines.
XX PS Table VIII; Page 67; 94pp; English.
XX CC The sequence is an analogue of mature hCG beta subunit having
XX CC a histidine and a glutamine residue inserted between
XX CC residues 54 and 55. This introduces an additional cleavage site
XX CC for CNBr, useful for determining the disulphide bonds. This can be
XX CC used to show that mutagenesis has not altered the "normal" disulphide
XX CC pattern of analogues, and for examining protein folding.
XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX SQ Sequence 147 AA;
XX Query Match 97.7%; Score 759; DB 12; Length 147;
XX Beat Local Similarity 98.6%; Pred. No. 1.8e-61;
XX Matches 140; Conservative 0; Mismatches 0; Indels 2; Gaps 1;
OY 2 SKEPLRPRCPINATLAVEREGCPVCITVNTTICAGTCPTMTVRVQLGVLPALP--QVVCN 59
DB 1 SKEPLRPRCPINATLAVEREGCPVCITVNTTICAGTCPTMTVRVQLGVLPALPQHVVCN 60
OY 60 YRDVRFESIRLPCPGVNPVYVAVALSCQCALCRSTTDCGPGKHPLTCDPRDSSS 119
DB 61 YRDVRFESIRLPCPGVNPVYVAVALSCQCALCRSTTDCGPGKHPLTCDPRDSSS 120
OY 120 SSSKAPPPSLPSRLPGSDT 141
DB 121 SSSKAPPPSLPSRLPGSDT 142
RESULT 61
AAR27682
ID AAR27682 standard; Protein; 145 AA.
XX AC AAR27682;
XX DT 12-JAN-1998 (first entry)
XX DE Chorionic gonadotrophin beta subunit amino-terminal loop mutant.
XX KW Human; chorionic gonadotrophin; chorionic gonadotropin; beta-hCG;
XX KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
XX KW contragestative medicament; cross-reactivity; luteinising hormone;
XX KW neutralising antibody.
XX OS Homo sapiens.
XX PN W09704098-A2.
XX PD 06-FEB-1997.
XX PR 19-JUL-1996; 96WO-GB01717.
XX PR 19-JUL-1995; 95GB-0014816.
XX PA (DELV/) DELVES P J.
XX PA (ROIT/) ROITT I M.
XX PI Delvea PJ, Lund T, Roitt IM;
XX DR WPI; 1997-132639/12.
XX
```

PT Modified beta-human chorionic gonadotrophin proteins - useful as  
 XX contragestative vaccine  
 XX  
 PS Example; Page -: 23pp; English.  
 CC  
 CC The present sequence is the human chorionic gonadotrophin beta  
 CC subunit (beta-hCG), amino-terminal loop mutant Val125Iyr.  
 CC which can be used in the preparation of a contragestative  
 CC medicament. The modified beta-hCG has reduced cross-reactivity with  
 CC luteinising hormone (LH), as defined by the ability of both  
 CC proteins to react with the same antibody. The modified beta-hCG can  
 CC be used as a contraceptive in females, in a vaccine, in a hCG  
 CC specific immunoassay and for applications where hCG is active, e.g.  
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce  
 CC other natural hormones.  
 CC N.B. Sequence not given in the specification, but constructed using  
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40  
 CC (1984).  
 XX  
 XX Sequence 145 AA:  
 SQ  
 Query Match 97.4%; Score 757; DB 18; Length 145;  
 Best Local Similarity 98.6%; Pred. No. 2.7e-61;  
 Matches 136; Conservative 0; Mismatches 2; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTCAGYCPGPNVRLVQGLPALPQVNCNR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITNTTCAGYCPGPNVRLVQGLPALPQVNCNR 60  
 QY 62 DVRESIRLPGCPGPNVSVYAVALSQCACLCRRSTTDCGGPKDHPDLPDPPDSSS 121  
 DB 61 DVRESIRLPGCPGPNVSVYAVALSQCACLCRRSTTDCGGPKDHPDLPDPPDSSS 120  
 QY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140  
 RESULT 62  
 AAW27684  
 ID AAW27684 standard; protein; 145 AA.  
 XX  
 XX AAW27684;  
 DT 12-JAN-1998 (first entry)  
 XX  
 XX Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.  
 XX Human; chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;  
 XX beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;  
 XX contragestative medicament; cross-reactivity; luteinising hormone;  
 XX contraceptive; immunoassay; Kaposi sarcoma; inhibition;  
 XX neutralising antibody.  
 XX  
 XX Homo sapiens.  
 OS Synthetic.  
 XX  
 XX Key Location/Qualifiers  
 XX Misc-difference 68  
 XX /note- "wild type Arg replaced with Glu"  
 XX  
 XX W09704098-A2.  
 XX  
 XX 06-FEB-1997.  
 XX  
 XX 19-JUL-1996; 96WO-GB01717.  
 XX  
 XX 19-JUL-1995; 95GB-0014816.  
 XX  
 XX (DELV/) DELVES P J.  
 XX (NOTI/) ROITT I W.  
 XX

PI Delves PJ, Lund T, Roitt IN;  
 XX WPI; 1997-132639/12.  
 XX Modified beta-human chorionic gonadotrophin proteins - useful as  
 XX contragestative vaccine  
 XX  
 PS Claim 5; Page -: 23pp; English.  
 CC  
 CC The present sequence is the human chorionic gonadotrophin beta  
 CC subunit (beta-hCG), carboxy-terminal loop mutant Arg88Glu,  
 CC which can be used in the preparation of a contragestative  
 CC medicament. The modified beta-hCG has reduced cross-reactivity with  
 CC luteinising hormone (LH), as defined by the ability of both  
 CC proteins to react with the same antibody. The modified beta-hCG can  
 CC be used as a contraceptive in females, in a vaccine, in a hCG  
 CC specific immunoassay and for applications where hCG is active, e.g.  
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce, e.g.  
 CC other natural hormones.  
 CC N.B. Sequence not given in the specification, but constructed using  
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40  
 CC (1984).  
 XX  
 XX Sequence 145 AA:  
 SQ  
 Query Match 97.4%; Score 757; DB 18; Length 145;  
 Best Local Similarity 98.6%; Pred. No. 2.7e-61;  
 Matches 136; Conservative 0; Mismatches 2; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTCAGYCPGPNVRLVQGLPALPQVNCNR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITNTTCAGYCPGPNVRLVQGLPALPQVNCNR 60  
 QY 62 DVRESIRLPGCPGPNVSVYAVALSQCACLCRRSTTDCGGPKDHPDLPDPPDSSS 121  
 DB 61 DVRESIRLPGCPGPNVSVYAVALSQCACLCRRSTTDCGGPKDHPDLPDPPDSSS 120  
 QY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140  
 RESULT 63  
 AAR15117  
 ID AAR15117 standard; protein; 145 AA.  
 XX  
 XX AAR15117;  
 DT 11-FEB-1992 (first entry)  
 XX  
 XX hCG/hLH chimera, A3a.  
 DE  
 XX Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestative; vaccine; human chorionic gonadotrophin;  
 KW luteinising hormone; LH; CG.  
 XX  
 XX Homo sapiens.  
 OS  
 XX W09116922-A.  
 XX  
 XX 14-NOV-1991.  
 XX  
 XX 07-MAY-1991; 91WO-US03162.  
 XX  
 XX 08-MAY-1990; 90US-0520703.  
 XX  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX

PT New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table VI; Page 65; 94pp: English.  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 77, 82, and 83 replaced by the corresponding  
 CC residues in the human LH protein. The chimeric hormone may be  
 CC useful in the treatment of infertility in men and women and the  
 CC promotion of fertility in male and female animals.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX  
 XX Sequence 145 AA;

Query Match 97.3%; Score 756; DB 12; Length 145;  
 Best Local Similarity 97.3%; Pred. No. 3.3e-61;  
 Matches 137; Conservative 2; Mismatches 1; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTVRVQGVLPALPQVVCNTR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTVRVQGVLPALPQVVCNTR 60  
 QY 62 DVFESIRLPCGRCNPNVYVAVALSCQCALCRSTTDCGPKDHPITCDPRQDSSS 121  
 DB 61 DVFESIRLPCGRCNPNVYVAVALSCQCALCRSTTDCGPKDHPITCDPRQDSSS 120  
 QY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140

RESULT 64  
 AAR15177  
 ID AAR15177 standard; Protein; 145 AA.  
 AC AAR15177;  
 DT 11-FEB-1992 (first entry)  
 XX hCG histidine substitution mutant, G8.  
 XX Glycoprotein hormone; human chorionic gonadotropin; disulphide.  
 XX Homo sapiens.  
 XX Key Location/Qualifiers  
 FH Misc-difference 78 /note- "anything but Pro"  
 FT Misc-difference 71 /label- Ser, Thr  
 XX W09116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91MO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UNY-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table VIII; Page 67; 94pp: English.  
 XX The sequence is an analogue of mature hCG beta subunit.

CC The substitution introduces an additional cleavage site for CNBr.  
 CC useful for determining the disulphide bonds. This can be used to  
 CC show that mutagenesis has not altered the "normal" disulphide pattern  
 CC of analogues, and for examining protein folding.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX  
 XX Sequence 145 AA;

Query Match 97.3%; Score 756; DB 12; Length 145;  
 Best Local Similarity 98.6%; Pred. No. 3.3e-61;  
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTVRVQGVLPALPQVVCNTR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTVRVQGVLPALPQVVCNTR 60  
 QY 62 DVFESIRLPCGRCNPNVYVAVALSCQCALCRSTTDCGPKDHPITCDPRQDSSS 121  
 DB 61 DVFESIRLPCGRCNPNVYVAVALSCQCALCRSTTDCGPKDHPITCDPRQDSSS 120  
 QY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140

RESULT 65  
 AAR27688  
 ID AAR27688 standard; protein; 145 AA.  
 AC AAR27688;  
 DT 12-JAN-1998 (first entry)  
 XX Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.  
 XX Human; chorionic gonadotrophin; chorionic gonadotropin; beta-hCG;  
 KW beta subunit; amino-terminal loop; mutant; ectoderm; LH; vaccine;  
 KW contragestive; immunosay; Kaposi sarcoma; inhibition;  
 KW neutralising antibody.  
 XX Homo sapiens.  
 XX Synthetic.  
 XX Key Location/Qualifiers  
 FH Misc-difference 74 /note- "wild type Arg replaced with Ser"  
 FT Misc-difference 74 /note- "wild type Arg replaced with Ser"  
 XX W09704098-A2.  
 XX 06-FEB-1997.  
 XX 19-JUL-1996; 96WO-GB01717.  
 XX 19-JUL-1995; 95GB-0014816.  
 XX (DELV/) DELVES P J.  
 XX (ROIT/) ROIT I M.  
 XX Delves PJ, Lund T, Roitt IM;  
 XX WPI; 1997-132639/12.  
 XX Modified beta-human chorionic gonadotrophin proteins - useful as  
 PT contragestative vaccine  
 XX Example; Page -: 23pp: English.  
 XX The present sequence is the human chorionic gonadotrophin beta  
 CC subunit (beta-hCG), carboxy-terminal loop mutant Arg74Ser,  
 CC which can be used in the preparation of a contragestative  
 CC medicament. The modified beta-hCG has reduced cross-reactivity with  
 CC luteinising hormone (LH), as defined by the ability of both

CC proteins to react with the same antibody. The modified beta-hCG can  
 CC be used as a contraceptive in females, in a vaccine, in a hCG  
 CC specific immunoassay and for applications where hCG is active, e.g.  
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce  
 CC neutralising antibodies to beta-hCG, which do not cross-react with  
 CC other natural hormones.  
 CC N.B. Sequence in the specification, but constructed using  
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40  
 CC (1984).

XX SQ Sequence 145 AA:  
 Query Match 97.3%; Score 756; DB 18; Length 145;  
 Best Local Similarity 98.6%; Pred. No. 3.3e-61;  
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

QY 2 SKEPLPRCPINATLAVEKCGPCVITNTTICAGYCTPTMRVLQGLPALPOVVCNVR 61  
 DB 1 SKEPLPRCPINATLAVEKCGPCVITNTTICAGYCTPTMRVLQGLPALPOVVCNVR 60  
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGGPKDHPKLTCDPREFQSSS 121  
 DB 61 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGGPKDHPKLTCDPREFQSSS 120  
 QY 122 SKAPPPSLPSRLPGPSDT 141  
 DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 66  
 AAW27687  
 ID AAW27687 standard; protein; 145 AA.  
 XX  
 AC AAW27687;  
 XX  
 DT 12-JAN-1998 (first entry)  
 XX  
 DX Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.  
 XX  
 KW Human; chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;  
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;  
 KW contraceptive medication; cross-reactivity; luteinising hormone;  
 KW neutralising antibody.  
 XX  
 OS Homo sapiens.  
 OS Synthetic.  
 XX  
 FH Key Location/Qualifiers  
 FT Misc-difference 79 /note= "wild type val replaced with His"  
 XX  
 XX WO9704098-A2.  
 XX  
 PD 06-FEB-1997.  
 XX  
 XX 19-JUL-1996; 96WO-GB01717.  
 XX  
 PF 19-JUL-1995; 95GB-0014816.  
 XX  
 PR (DELV/) DELVES P. J.  
 PA (ROIT/) ROITT I. M.  
 XX  
 XX Delves P.J., Lund T., Roitt I.M.  
 XX  
 XX WPI; 1997-132639/12.  
 DR  
 XX Modified beta-human chorionic gonadotrophin proteins - useful as  
 XX contraceptive vaccine  
 PT  
 XX Example; Page -: 23pp; English.  
 XX  
 XX The present sequence is the human chorionic gonadotrophin beta

CC subunit (beta-hCG), carboxy-terminal loop mutant Val79His,  
 CC which can be used in the preparation of a contraceptive  
 CC medicament. The modified beta-hCG has reduced cross-reactivity with  
 CC luteinising hormone (LH), as defined by the ability of both  
 CC proteins to react with the same antibody. The modified beta-hCG can  
 CC be used as a contraceptive in females, in a vaccine, in a hCG  
 CC specific immunoassay and for applications where hCG is active, e.g.  
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce  
 CC neutralising antibodies to beta-hCG, which do not cross-react with  
 CC other natural hormones.  
 CC N.B. Sequence not given in the specification, but constructed using  
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40  
 CC (1984).

XX SQ Sequence 145 AA:  
 Query Match 97.2%; Score 755; DB 18; Length 145;  
 Best Local Similarity 98.5%; Pred. No. 4.4e-61;  
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

QY 2 SKEPLPRCPINATLAVEKCGPCVITNTTICAGYCTPTMRVLQGLPALPOVVCNVR 61  
 DB 1 SKEPLPRCPINATLAVEKCGPCVITNTTICAGYCTPTMRVLQGLPALPOVVCNVR 60  
 QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGGPKDHPKLTCDPREFQSSS 121  
 DB 61 DVRFESIRLPGCPGVNPNVSYAVALSQCQALCRSTTDCGGPKDHPKLTCDPREFQSSS 120  
 QY 122 SKAPPPSLPSRLPGPSDT 141  
 DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 67  
 AAR86258  
 ID AAR86258 standard; Protein; 181 AA.  
 XX  
 AC AAR86258;  
 XX  
 DT 02-MAY-1996 (first entry)  
 XX  
 DX Human CG beta-subunit (N130) lacking first glycosylation site.  
 XX  
 KW Single chain gonadotropin; human chorionic gonadotropin; hCG;  
 KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;  
 KW inhibit; stimulate; increase; lutropin; luteinising hormone; LH;  
 KW follicle stimulating hormone; FSH; vaccine; contraceptive;  
 KW deglycosylated; glycosylation site; deletion.  
 XX  
 OS Synthetic.  
 XX  
 FH Key Location/Qualifiers  
 FT Peptide 1..20  
 FT /label= leader  
 FT Region 21..165  
 FT /label= hCG\_beta\_subunit\_(1-145)  
 FT /note= "the native glycosylation site at position  
 FT 13 of hCG beta has been removed"  
 FT Misc-difference 33 /note= "wild-type Asn 13 has been replaced by Gln  
 FT to remove a glycosylation site"  
 FT Misc-difference 70 /note= "Arg corresponds to CCG codon"  
 FT Region 166..173  
 FT /label= linker  
 FT Region 174..181  
 FT /label= Gonadotropin\_alpha\_subunit\_(1-8)  
 FT /note= "first 8 residues of alpha subunit"  
 XX  
 PN WO9523240-A1.  
 XX  
 PD 24-AUG-1995.  
 XX

PI	Campbell RK, Moyle WR;
XX	
DR	WPI; 1991-353528/48.
XX	
PT	New glyco-protein hormone analogues - for inducing fertility as
PT	immuno-castration agents, for suppressing reproductive system
PT	development and as immuno-contraceptive vaccines.
XX	
Table II:	Page 61; 94pp; English.
PS	
XX	The sequence is an analogue of mature hCG beta subunit having
CC	residues 35-56, replaced by the corresponding residues
CC	of hCG beta subunit. The chimeric protein directed
CC	mutagenesis of a cDNA sequence encoding the hCG beta subunit.
CC	The chimeric hormone is capable of directing hormone binding to
CC	both LH and FSH receptors and may be useful for the treatment of
CC	infertility in men and women and the promotion of fertility in male
CC	and female animals. (See AAR15043, AAR15061-R15125 and
CC	AAR15161-R15198).
XX	
Sequence	145 AA;
SQ	
Query Match	97.0% Score 754; DB 12; Length 145;
Best Local Similarity	97.9%; Pred. No. 5e-61;
Matches 137:	Conservative 0; Mismatches 3; Indels 0; Gaps 0;
OY	2 SKELPRCPRIATNATLVEKEGPGCVITVTTTCAGTCTRTVRLOGVLPAALPOVCNTR 61
DB	
DB	1 SKELPRCPRIATNATLVEKEGPGCVITVTTTCAGTCTRTVRLOGVLPAALPQNTCTR 60
OY	62 DVRFESTRLPGCGPNVPVSVAVALSQCQALCRSTTDCGGPKDHPILTCDDPRFDSSS 121
DB	
DB	61 DVRFESTRLPGCGPNVPVSVAVALSQCQALCRSTTDCGGPKDHPILTCDDPRFDSSS 120
OY	122 SKAPPPSLSPSRLPGPSDT 141
DB	
DB	121 SKAPPPSLSPSRLPGPSDT 140
RESULT 59	
ID	AAR15110
AC	AAR15110 standard; Protein: 145 AA.
AC	AAR15110;
XX	
DT	11-FEB-1992 (first entry)
DE	hCG/eLH chimera, E2.
KW	Glycoprotein hormone: immuno-castration;
KW	luteinising hormone; vaccine human chorionic gonadotropin;
OS	Homo sapiens.
OS	Equus caballus.
PX	WO9116922-A.
PN	
PD	14-NOV-1991.
XI	07-MAY-1991; 91WO-US03162.
PR	08-MAY-1990; 90US-0520703.
PA	(UTNE-) UNIV MED NEW JERSEY.
PI	Campbell RK, Moyle WR;
XX	
DR	WPI; 1991-353528/48.
XX	
PT	New glyco-protein hormone analogues - for inducing fertility as
PT	immuno-castration agents, for suppressing reproductive system
PT	development and as immuno-contraceptive vaccines.

XX PS Table V; Page 64; 94pp; English.

XX CC The sequence is an analogue of mature hCG beta subunit having

XX CC residues 95-96 corresponding to residues 95-96 of the equine

XX CC LH protein. The chimeric hormone has been used to identify equine

XX CC residues which are important for binding to the human receptor and

XX CC may also have applications as an immunogen, agonist and/or antagonist.

XX CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX SQ Sequence 145 AA:

Query Match 97.0%; Score 754; DB 12; Length 145;

Best Local Similarity 97.9%; Pred. No. 5e-61;

Matches 137; Conservative 1; Mismatches 2; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVKESGCPVITVTTCAGYCTPTMTVLQGLPALPQVYCNTR 61

DB 1 SKEPLRRCRPNATLAVKESGCPVITVTTCAGYCTPTMTVLQGLPALPQVYCNTR 60

QY 62 DVRFESIRLPGCPGPNVWYVAVALSCQCALCRSTTDCGPKDHPDLTCDPRFDSSS 121

DB 61 DVRFESIRLPGCPGPNVWYVAVALSCQCALCRSTTDCGPKDHPDLTCDPRFDSSS 120

QY 122 SKAPPSLPSPSLPGPSDT 141

DB 121 SKAPPSLPSPSLPGPSDT 140

RESULT 70

AAR27686

ID AAR27686 standard; protein: 145 AA.

XX AC AAR27686;

XX DT 12-JAN-1998 (first entry)

XX DE Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.

XX KW Human; chorionic gonadotrophin; chorionic gonadotropin; beta-hCG;

XX KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;

XX KW contraceptive medication; cross-reactivity; luteinising hormone;

XX KW neutralising antibody.

XX OS Homo sapiens.

XX SS Synthetic.

PH Key Location/Qualifiers

FT Misc-difference 75 /note= "wild type Gly replaced with His"

XX PN W09704098-A2.

XX PD 06-FEB-1997.

XX PF 19-JUL-1996; 96WO-GB01717.

XX PR 19-JUL-1995; 95GB-0014816.

XX RA (DELV/) DELVES P J.

XX PA (ROIT/) ROITT I M.

XX PI Delves PJ, Lund T, Roitt IM;

XX WPI: 1997-132639/12.

XX Modified beta-human chorionic gonadotrophin proteins - useful as

XX PT contraceptive vaccine

XX PS Example; Page -: 23pp; English.

XX CC The present sequence is the human chorionic gonadotrophin beta

CC subunit (beta-hCG), carboxy-terminal loop mutant Gly75His,

CC which can be used in the preparation of a contraceptive

CC medication. The modified beta-hCG has reduced cross-reactivity with

CC luteinising hormone (LH), as defined by the ability of both hCG can

CC be used to react with same antibody. A vaccine in a hCG can

CC be used as contraceptive in females. A vaccine in a hCG

CC specific immunoassay and for applications where hCG is active, e.g.

CC Kaposi sarcoma inhibition. The modified beta-hCG can produce

CC neutralising antibodies to beta-hCG, which do not cross-react with

CC other natural hormones.

CC N.B. Sequence not given in the specification, but constructed using

CC the wild type beta-hCG sequence given in nature 307 959460, 37-40

CC (1984).

XX SQ Sequence 145 AA:

Query Match 97.0%; Score 754; DB 18; Length 145;

Best Local Similarity 98.6%; Pred. No. 5e-61;

Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVKESGCPVITVTTCAGYCTPTMTVLQGLPALPQVYCNTR 61

DB 1 SKEPLRRCRPNATLAVKESGCPVITVTTCAGYCTPTMTVLQGLPALPQVYCNTR 60

QY 62 DVRFESIRLPGCPGPNVWYVAVALSCQCALCRSTTDCGPKDHPDLTCDPRFDSSS 121

DB 61 DVRFESIRLPGCPGPNVWYVAVALSCQCALCRSTTDCGPKDHPDLTCDPRFDSSS 120

QY 122 SKAPPSLPSPSLPGPSDT 141

DB 121 SKAPPSLPSPSLPGPSDT 140

RESULT 71

AAR27681

ID AAR27681 standard; protein: 145 AA.

XX AC AAR27681;

XX DT 12-JAN-1998 (first entry)

XX DE Chorionic gonadotrophin beta subunit amino-terminal loop mutant.

XX KW Human; chorionic gonadotrophin; chorionic gonadotropin; beta-hCG;

XX KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;

XX KW contraceptive medication; cross-reactivity; luteinising hormone;

XX KW neutralising antibody.

XX OS Homo sapiens.

XX SS Synthetic.

PH Key Location/Qualifiers

FT Misc-difference 24 /note= "wild type Pro replaced with His"

XX PN W09704098-A2.

XX PD 06-FEB-1997.

XX PF 19-JUL-1996; 96WO-GB01717.

XX PR 19-JUL-1995; 95GB-0014816.

XX RA (DELV/) DELVES P J.

XX PA (ROIT/) ROITT I M.

XX PI Delves PJ, Lund T, Roitt IM;

XX WPI: 1997-132639/12.

XX Modified beta-human chorionic gonadotrophin proteins - useful as

XX PT contraceptive vaccine

XX Example: Page -: 23pp; English.  
 XX  
 CC The present sequence is the human chorionic gonadotrophin beta  
 CC subunit (beta-hCG), amino-terminal loop mutant Pro24His,  
 CC which can be used in the preparation of a contraceptive  
 CC medicament. The modified beta-hCG has reduced cross-reactivity with  
 CC luteinising hormone (LH), as defined by the ability of both  
 CC beta-hCGs to react with the same antibody. The modified beta-hCG can  
 CC be used as a contraceptive agent. The modified beta-hCG is active, e.g.  
 CC specific immunoassay and for applications where hCG is active, e.g.  
 CC Kaposi sarcoma inhibition. The modified beta-hCG can produce  
 CC neutralising antibodies to beta-hCG, which do not cross-react with  
 CC other natural hormones.  
 CC N.B. Sequence not given in the specification, but constructed using  
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40  
 CC (1984).  
 XX  
 SQ Sequence 145 AA:  
 Query Match 96.9%; Score 753; DB 18; Length 145;  
 Best Local Similarity 98.6%; Pred. No. 6.2e-61;  
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0:  
 QY 2 SKEPLAPRCRPNATLAVERGECPCVITVTTCAGYCTMTVRVQGVLPALPQVNCYR 61  
 DB 1 SKEPLAPRCRPNATLAVERGECPCVITVTTCAGYCTMTVRVQGVLPALPQVNCYR 60  
 QY 62 DVRFESIRLPGCRGVNPVYVAVALSCQALCRSTTDCGKDPHPLTCDPRFQSSS 121  
 DB 61 DVRFESIRLPGCRGVNPVYVAVALSCQALCRSTTDCGKDPHPLTCDPRFQSSS 120  
 QY 122 SKAPPSLPSPSLRPGSDT 141  
 DB 121 SKAPPSLPSPSLRPGSDT 140  
 RESULT 72  
 AA99541  
 ID AA99541 standard; Protein; 165 AA.  
 AC AA99541;  
 XX  
 DT 08-JUN-1999 (first entry)  
 XX  
 DE hCG-beta analogue hCG-beta-Y37C.D99C.  
 XX  
 KW Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KW human follicle stimulating hormone; human thyroid stimulating hormone;  
 KW stability; primer; amplification; PCR; mutation.  
 XX  
 OS Homo sapiens.  
 OS Synthetic.  
 XX  
 PN WO9858957-A2.  
 XX  
 PD 30-DEC-1998.  
 XX  
 XX 25-JUN-1998; 98WO-US13070.  
 XX  
 XX 25-JUN-1997; 97US-0050784.  
 XX  
 XX (ISTP) ARS APPLIED RES SYSTEMS HOLDING NY.  
 PA (MCIN-) MCINNIS P.G.  
 XX  
 XX Moyle WR;  
 XX  
 XX WPI; 1999-081219/07.  
 XX  
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 PT or hTSH, have an intersubunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability

XX Disclosure: Fig 31B; 139pp; English.  
 XX  
 CC The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating  
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 CC nucleins, which are modified to contain an intersubunit disulphide bond,  
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, of the  
 CC native hormone. The modified nucleins are designed to reduce the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutant hCG-beta subunit used for the generation of  
 CC the modified GPHs. The improved analogues are designed specifically  
 CC to reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer will have affinity for the native receptors and have  
 CC agonistic activity on them. The changes stabilise the GPHs and prolong  
 CC the biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX  
 SQ Sequence 165 AA:  
 Query Match 96.8%; Score 752; DB 20; Length 165;  
 Best Local Similarity 98.6%; Pred. No. 8.7e-61;  
 Matches 138; Conservative 0; Mismatches 2; Indels 0; Gaps 0:  
 QY 2 SKEPLAPRCRPNATLAVERGECPCVITVTTCAGYCTMTVRVQGVLPALPQVNCYR 61  
 DB 21 SKEPLAPRCRPNATLAVERGECPCVITVTTCAGYCTMTVRVQGVLPALPQVNCYR 80  
 QY 62 DVRFESIRLPGCRGVNPVYVAVALSCQALCRSTTDCGKDPHPLTCDPRFQSSS 121  
 DB 81 DVRFESIRLPGCRGVNPVYVAVALSCQALCRSTTDCGKDPHPLTCDPRFQSSS 140  
 QY 122 SKAPPSLPSPSLRPGSDT 141  
 DB 141 SKAPPSLPSPSLRPGSDT 160  
 RESULT 73  
 AA995112  
 ID AA995112 standard; Protein; 145 AA.  
 AC AA995112;  
 XX  
 DT 11-FEB-1992 (first entry)  
 XX  
 DE hCG/αLH chimera, E4.  
 XX  
 KW Glycoprotein hormone; immuno-castration;  
 KW immuno-contraceptive; vaccine;  
 KW luteinising hormone; LH; CG; equine; horse.  
 XX  
 OS Homo sapiens.  
 OS Equus caballus.  
 XX  
 PN WO9116922-A.  
 XX  
 PD 14-NOV-1991.  
 XX  
 XX 07-MAY-1991; 91MO-US03162.  
 XX  
 XX 08-MAY-1990; 90US-0520703.  
 XX  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX  
 XX Campbell RK, Moyle WR;  
 XX  
 XX WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.



XX PS Table V; Page 64; 94pp: English.  
 CC The sequence is an analogue of mature hCG beta subunit having  
 CC residues 112-115 replaced by the corresponding residues in the  
 CC sequence of hCG beta subunit. The chimeric hormone may be useful for  
 CC identifying residues which are important for binding to the human  
 CC receptor and may also have applications as an immunogen, agonist  
 CC and/or antagonist.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX SQ Sequence 145 AA:  
 Query Match 96.5%; Score 750; DB 12; Length 145;  
 Best Local Similarity 97.9%; Pred. No. 1.2e-60;  
 Matches 137; Conservative 1; Mismatches 2; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQGLPALPOVYCNR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQGLPALPOVYCNR 60  
 QY 62 DYRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDPTCDPFOQSSS 121  
 DB 61 DYRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDPTCDPFOQSSS 120  
 QY 122 SKAPPSLPSPSLPGPSDT 141  
 DB 121 SKAPPSLPSPSLPGPSDT 140  
 RESULT 74  
 AAR15069  
 ID AAR15069 standard; Protein: 145 AA.  
 AC AAR15069;  
 XX 11-FEB-1992 (first entry)  
 PT hCG/hFSH chimera, B9.  
 DE hCG/hFSH chimera, B9.  
 XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG;  
 XX Homo sapiens.  
 OS Homo sapiens.  
 PN WO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 PI WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table II; Page 61; 94pp: English.  
 CC The sequence is an analogue of mature hCG beta subunit having  
 CC residues 94-97 replaced by the corresponding residues in the  
 CC hFSH protein. It was prep. by site directed mutagenesis of a  
 CC cDNA sequence encoding the hCG beta subunit. The chimeric  
 CC hormone is capable of directing hormone binding to both LH and  
 CC FSH receptors and may be useful for the treatment of infertility  
 CC in men and women and the promotion of fertility in male

CC and female animals. (See AAR15043, AAR15061-R15125 and  
 CC AAR15161-R15198).  
 XX SQ Sequence 145 AA:  
 Query Match 96.4%; Score 749; DB 12; Length 145;  
 Best Local Similarity 97.1%; Pred. No. 1.4e-60;  
 Matches 136; Conservative 1; Mismatches 3; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQGLPALPOVYCNR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQGLPALPOVYCNR 60  
 QY 62 DYRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDPTCDPFOQSSS 121  
 DB 61 DYRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDPTCDPFOQSSS 120  
 QY 122 SKAPPSLPSPSLPGPSDT 141  
 DB 121 SKAPPSLPSPSLPGPSDT 140  
 RESULT 75  
 AAR15118  
 ID AAR15118 standard; Protein: 145 AA.  
 AC AAR15118;  
 XX 11-FEB-1992 (first entry)  
 PT hCG/hLH chimera, A3b.  
 DE hCG/hLH chimera, A3b.  
 XX Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW luteinising hormone; LH; CG.  
 XX Homo sapiens.  
 OS Homo sapiens.  
 PN WO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 PI WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table VI; Page 65; 94pp: English.  
 CC The sequence is an analogue of mature hCG beta subunit having  
 CC residues 99, 91, 92 and 99 replaced by the corresponding  
 CC residues in the human LH protein. The chimeric hormone may be  
 CC useful in the treatment of infertility in men and women and the  
 CC promotion of fertility in men and women.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX SQ Sequence 145 AA:  
 Query Match 96.4%; Score 749; DB 12; Length 145;  
 Best Local Similarity 97.1%; Pred. No. 1.4e-60;  
 Matches 136; Conservative 1; Mismatches 3; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQGLPALPOVYCNR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGTCPTMTNTRVQGLPALPOVYCNR 60

Db 1 SKEPLRPRINATLAVEKCGPCVITVNTTICAGYCTPTMRVLOGVLPALPQVNCYR 60  
 QY 62 DVRFESIRLPCGPGVNVVSYAVALSQCACLRSTTDCGGPKDHPITCDDPRQSSS 121  
 Db 61 DVRFESIRLPCGPGVNVVSYAVALSQCACLRSTTDCGGPKDHPITCDDPRQSSS 120  
 QY 122 SKAPPSLPSRLPGSDT 141  
 Db 121 SKAPPSLPSRLPGSDT 140

RESULT 76  
 AAY43270  
 ID AAY43270 standard; Protein: 204 AA.  
 XX  
 XX AAY43270:  
 XX  
 DT 19-JAN-2000 (first entry)  
 XX  
 DE Human CG beta subunit-Jun fusion protein sequence.  
 XX  
 DE Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;  
 KW beta subunit; therapy; Jun.  
 XX  
 OS Homo sapiens.  
 OS Synthetic.  
 PN MO9953065-A1.  
 XX  
 XX 21-OCT-1999.  
 XX  
 XX 13-APR-1999; 99MO-US08018.  
 XX  
 XX 14-APR-1998; 980S-0059625.  
 XX  
 XX (UYNE-) UNIV NEW JERSEY.  
 XX  
 XX Moyle WR:  
 DR WPI: 1999-620431/53.  
 DR N-PSDB: AAZ31742.  
 XX  
 PT Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins -  
 XX  
 XX Example 1; Fig 6; 73pp: English.  
 XX  
 CC This sequence represents a fusion protein of the human chorionic  
 CC gonadotrophin (hCG) beta subunit and Jun. The invention relates to a  
 CC method of forming a cysteine knot protein (I) having alpha and  
 CC beta-subunits comprising attaching a dimerisation domain (DD) to either  
 CC the N-termini of both subunits or the N-terminus of the alpha-subunit and  
 CC to the C-terminus of the beta-subunit and dimerising the products to form  
 CC a heterodimeric protein analog (II). The method is used to produce  
 CC analogues (agonists or antagonists) of deglycosylated glycoprotein  
 CC hormones, potentially useful, e.g. for treating infertility where caused  
 CC by polycystic ovarian disease (associated with excessive levels of  
 CC luteinising hormone). Products that retain DD's are also useful as  
 CC immunogens (since a DD may contain highly antigenic amino  
 CC acid sequences). Attachment of a DD which may be removed later  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC (and thus receptor-binding and immunogenic properties) to native dimers,  
 CC and allows the combination of subunits that would otherwise combine  
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC formation of homodimers. Heterodimers have longer circulation times in  
 CC vivo than individual subunits.

Sequence 204 AA:  
 Query Match 96.4%; Score 749; DB 20; Length 204;

Best Local Similarity 100.0%; Pred. NO. 2e-60;  
 Matches 136; Conservative 0; Mismatches 0; Indels 0; Caps 0;

QY 6 LRPRCPINATLAVEKCGPCVITVNTTICAGYCTPTMRVLOGVLPALPQVNCYR 65  
 Db 64 LRPRCPINATLAVEKCGPCVITVNTTICAGYCTPTMRVLOGVLPALPQVNCYR 123  
 QY 66 ESIRLPCGPGVNVVSYAVALSQCACLRSTTDCGGPKDHPITCDDPRQSSSKAP 125  
 Db 124 ESIRLPCGPGVNVVSYAVALSQCACLRSTTDCGGPKDHPITCDDPRQSSSKAP 183

QY 126 PFLPSLPSRLPGSDT 141  
 Db 184 PFLPSLPSRLPGSDT 199

RESULT 77  
 AAY43274  
 ID AAY43274 standard; Protein: 204 AA.  
 XX  
 XX AAY43274:  
 XX  
 DT 19-JAN-2000 (first entry)  
 XX  
 DE Human CG beta subunit-Jun fusion protein sequence.  
 XX  
 DE Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;  
 KW beta subunit; therapy; Jun.  
 XX  
 OS Homo sapiens.  
 OS Synthetic.  
 PN MO9953065-A1.  
 XX  
 XX 21-OCT-1999.  
 XX  
 XX 13-APR-1999; 99MO-US08018.  
 XX  
 XX 14-APR-1998; 98US-0059625.  
 XX  
 XX (UYNE-) UNIV NEW JERSEY.  
 XX  
 XX Moyle WR:  
 DR WPI: 1999-620431/53.  
 DR N-PSDB: AAZ31750.  
 XX  
 PT Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins -  
 XX  
 XX Example 3; Fig 12; 73pp: English.  
 XX  
 CC This sequence represents a fusion protein of the human chorionic  
 CC gonadotrophin (hCG) beta subunit and Jun. The invention relates to a  
 CC method of forming a cysteine knot protein (I) having alpha and  
 CC beta-subunits comprising attaching a dimerisation domain (DD) to either  
 CC the N-termini of both subunits or the N-terminus of the alpha-subunit and  
 CC to the C-terminus of the beta-subunit and dimerising the products to form  
 CC a heterodimeric protein analog (II). The method is used to produce  
 CC analogues (agonists or antagonists) of deglycosylated glycoprotein  
 CC hormones, potentially useful, e.g. for treating infertility where caused  
 CC by polycystic ovarian disease (associated with excessive levels of  
 CC luteinising hormone). Products that retain DD's are also useful as  
 CC immunogens (since a DD may contain highly antigenic amino  
 CC acid sequences). Attachment of a DD which may be removed later  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC (and thus receptor-binding and immunogenic properties) to native dimers,  
 CC and allows the combination of subunits that would otherwise combine  
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC formation of homodimers. Heterodimers have longer circulation times in  
 CC vivo than individual subunits.

QY 2 SKELPRPCRPINATLAVEKSGPCVITVTTCAGYCTMTTRVLQVLPALPQVVCNVR 61  
 DB 1 SKELPRPCRPINATLAVEKSGPCVITVTTCAGYCTMTTRVLQVLPALPQVVCNVR 60  
 QY 62 DYRFESIRLPCGPGVNPVSYAVALSCCALCRSTTDCGGPKDHPPLFCDDPRFQSSS 121  
 DB 61 DYRFESIRLPCGPGVNPVSYAVALSCCALCRSTTDCGGPKDHPPLFCDDPRFQSSS 120  
 QY 122 SKAPPPSLPSRLPGPSDT 141  
 DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 80  
 AAW27685  
 ID AAW27685 standard; protein; 145 AA.  
 AC AAW27685;  
 XX 12-JAN-1998 (first entry)  
 XX Chorionic gonadotrophin beta subunit carboxy-terminal loop mutant.  
 XX Human: chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;  
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;  
 KW contragestative medicament; cross-reactivity; luteinising hormone;  
 KW contraceptive; immunoassay; Kaposi sarcoma; inhibition;  
 KW neutralising antibody.  
 OS Homo sapiens.  
 OS Synthetic.  
 XX Key Location/Qualifiers  
 FT Misc-difference 71 /note= "wild type Gly replaced with Arg"  
 FT Misc-difference 74 /note= "wild type Arg replaced with Ser"  
 FT W09704098-A2.  
 XX 06-FEB-1997.  
 XX 19-JUL-1996; 96WO-GB01717.  
 XX 19-JUL-1995; 95GB-0014816.  
 XX (DELY/) DELVES P J.  
 XX (ROIT/) ROITT I M.  
 XX Delves PJ, Lund T, Roitt IM;  
 XX WPI: 1997-132639/12.  
 XX Modified beta-human chorionic gonadotrophin proteins - useful as  
 XX contragestative vaccine  
 XX Example; Page -: 23pp; English.  
 XX The present sequence is the human chorionic gonadotrophin beta  
 XX subunit (beta-hCG), carboxy-terminal loop mutant Gly71Arg,  
 XX Arg74Ser, which can be used in the preparation of a contragestative  
 XX medicament. The modified beta-hCG has reduced cross-reactivity with  
 XX luteinising hormone (LH), as defined by the ability of both hCG and  
 XX proteins to react with the same antibody. The modified beta-hCG can  
 XX be used as a contraceptive in females in a vaccine, in a hCG  
 XX specific immunoassay for luteinising hormone, and in a hCG  
 XX Kaposi sarcoma inhibition. The modified beta-hCG can produce, e.g.  
 XX neutralising antibodies to beta-hCG, which do not cross-react with  
 XX other natural hormones.  
 XX N.B. Sequence not given in the specification, but constructed using  
 XX the wild type beta-hCG sequence given in nature 307 959460, 37-40  
 XX (1984).

XX SQ Sequence 145 AA:  
 Query Match 96.3%; Score 748; DB 18; Length 145;  
 Best Local Similarity 97.9%; Pred. No. 1.8e-60;  
 Matches 137; Conservative 0; Mismatches 3; Indels 0; Gaps 0;  
 QY 2 SKELPRPCRPINATLAVEKSGPCVITVTTCAGYCTMTTRVLQVLPALPQVVCNVR 61  
 DB 1 SKELPRPCRPINATLAVEKSGPCVITVTTCAGYCTMTTRVLQVLPALPQVVCNVR 60  
 QY 62 DYRFESIRLPCGPGVNPVSYAVALSCCALCRSTTDCGGPKDHPPLFCDDPRFQSSS 121  
 DB 61 DYRFESIRLPCGPGVNPVSYAVALSCCALCRSTTDCGGPKDHPPLFCDDPRFQSSS 120  
 QY 122 SKAPPPSLPSRLPGPSDT 141  
 DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 81  
 AAW27679  
 ID AAW27679 standard; protein; 145 AA.  
 AC AAW27679;  
 XX 12-JAN-1998 (first entry)  
 XX Chorionic gonadotrophin beta subunit amino-terminal loop mutant.  
 XX Human: chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;  
 KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;  
 KW contragestative medicament; cross-reactivity; luteinising hormone;  
 KW contraceptive; immunoassay; Kaposi sarcoma; inhibition;  
 KW neutralising antibody.  
 OS Homo sapiens.  
 OS Synthetic.  
 XX Key Location/Qualifiers  
 FT Misc-difference 74 /note= "wild type Pro replaced with His"  
 FT Misc-difference 75 /note= "wild type Val replaced with Tyr"  
 FT W09704098-A2.  
 XX 06-FEB-1997.  
 XX 19-JUL-1996; 96WO-GB01717.  
 XX 19-JUL-1995; 95GB-0014816.  
 XX (DELY/) DELVES P J.  
 XX (ROIT/) ROITT I M.  
 XX Delves PJ, Lund T, Roitt IM;  
 XX WPI: 1997-132639/12.  
 XX Modified beta-human chorionic gonadotrophin proteins - useful as  
 XX contragestative vaccine  
 XX Example; Page -: 23pp; English.  
 XX The present sequence is the human chorionic gonadotrophin beta  
 XX subunit (beta-hCG), amino-terminal loop mutant Pro24His, Val25Tyr,  
 XX which can be used in the preparation of a contragestative  
 XX medicament. The modified beta-hCG has reduced cross-reactivity with  
 XX luteinising hormone (LH), as defined by the ability of both hCG and  
 XX proteins to react with the same antibody. The modified beta-hCG can  
 XX be used as a contraceptive in females, in a vaccine, in a hCG  
 XX specific immunoassay and for applications where hCG is active, e.g.

CC vivo than individual subunits.  
 XX  
 SQ Sequence 204 AA;  
 Query Match 96.4%; Score 749; DB 20; Length 204;  
 Best Local Similarity 100.0%; Pred. No. 2e-60;  
 Matches 136; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 6 LRPRCPINATLAVERKCPVCTVNTTCAGYCPMTVRVQGVLPALPQVYCNRYDRVF 65  
 DB 64 LRPRCPINATLAVERKCPVCTVNTTCAGYCPMTVRVQGVLPALPQVYCNRYDRVF 123  
 QY 66 ESIRLPGCGPGVNVYSYVALSCQALCRSTTDCGGPKDHPKPLTCDPFRQDSSSSKAP 125  
 DB 124 ESIRLPGCGPGVNVYSYVALSCQALCRSTTDCGGPKDHPKPLTCDPFRQDSSSSKAP 183  
 QY 126 PPSLPSRLPGPSDT 141  
 DB 184 PPSLPSRLPGPSDT 199  
 RESULT 78  
 AAY43306  
 XX AAY43306 standard; Protein: 208 AA.  
 AC AAY43306;  
 XX  
 DT 19-JAN-2000 (first entry)  
 XX  
 DE Human CG alpha subunit-Fos fusion protein sequence.  
 XX  
 KW Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;  
 KW alpha subunit; therapy; Fos.  
 XX  
 OS Homo sapiens.  
 QS Synthetic.  
 XX  
 PN W09953065-A1.  
 XX  
 PD 21-OCT-1999.  
 XX  
 PF 13-APR-1999; 99MO-US08018.  
 XX  
 PR 14-APR-1998; 98US-0059625.  
 XX  
 PA (UYNE-) UNIV NEW JERSEY.  
 XX  
 PI Moyle WR;  
 XX  
 DR WPI; 1999-620431/53.  
 XX  
 PT Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins.  
 XX  
 PS Example 2: Fig 10; 73pp: English.  
 XX  
 CC This sequence represents a fusion protein of the human chorionic  
 CC gonadotropin (hCG) alpha subunit and Fos. The invention relates to a  
 CC method of forming a cysteine knot protein (I) having alpha and  
 CC beta subunits comprising attaching a dimerisation domain (DD) to either  
 CC the N-termini of both subunits or the N-terminus of the alpha-subunit and  
 CC to the C-terminus of the beta-subunit and dimerising the products to form  
 CC a heterodimeric protein analog (II). The method is used to produce  
 CC analogues (agonists or antagonists) of deglycosylated glycoprotein  
 CC hormones, potentially useful, e.g. for treating infertility where caused  
 CC by polycystic ovarian disease (associated with excessive levels of  
 CC luteinising hormone). Products that retain DD's are also useful as  
 CC immunogens or antigens (since a DD may contain highly antigenic amino  
 CC acid residues). Attachment of a DD which may be removed later  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC (and thus receptor-binding and immunogenic properties) to native dimers,

CC and allows the combination of subunits that would otherwise combine  
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC the immunogenicity of the hormone.  
 CC vivo than individual subunits.  
 XX  
 SQ Sequence 208 AA;  
 Query Match 96.4%; Score 749; DB 20; Length 208;  
 Best Local Similarity 100.0%; Pred. No. 2.1e-60;  
 Matches 136; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 6 LRPRCPINATLAVERKCPVCTVNTTCAGYCPMTVRVQGVLPALPQVYCNRYDRVF 65  
 DB 68 LRPRCPINATLAVERKCPVCTVNTTCAGYCPMTVRVQGVLPALPQVYCNRYDRVF 127  
 QY 66 ESIRLPGCGPGVNVYSYVALSCQALCRSTTDCGGPKDHPKPLTCDPFRQDSSSSKAP 125  
 DB 128 ESIRLPGCGPGVNVYSYVALSCQALCRSTTDCGGPKDHPKPLTCDPFRQDSSSSKAP 187  
 QY 126 PPSLPSRLPGPSDT 141  
 DB 188 PPSLPSRLPGPSDT 203  
 RESULT 79  
 AAR15114  
 XX AAR15114 standard; Protein: 145 AA.  
 AC AAR15114;  
 XX  
 DT 11-FEB-1992 (first entry)  
 XX  
 DE hCG/hLH chimera, A1.  
 XX  
 KW Glycoprotein hormone; immuno-castration;  
 KW immuno-contraceptive; vaccine; human chorionic gonadotropin;  
 KW luteinising hormone; LH; CG.  
 XX  
 OS Homo sapiens.  
 XX  
 PN W09116922-A.  
 XX  
 PD 14-NOV-1991.  
 XX  
 PF 07-MAY-1991; 91WO-US03162.  
 XX  
 PR 08-MAY-1990; 90US-0520703.  
 XX  
 PA (UYNE-) UNIV MED NEW JERSEY.  
 XX  
 PI Campbell RK, Moyle WR;  
 XX  
 DR WPI; 1991-333528/48.  
 XX  
 PT New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-contraction agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX  
 PS Table VI; Page 65; 94pp: English.  
 XX  
 CC The sequence is an analogue of mature hCG beta subunit having  
 CC residues 2, 8, 10, and 15 replaced by the corresponding  
 CC residues in the human LH protein. The chimeric hormone may be  
 CC useful in the treatment of infertility in men and women and the  
 CC promotion of fertility in male and female animals.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX  
 SQ Sequence 145 AA;  
 Query Match 96.3%; Score 748; DB 12; Length 145;  
 Best Local Similarity 97.1%; Pred. No. 1.8e-60;  
 Matches 136; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

	Matches	136;	Conservative	0;	Mismatches	4;	Indels	0;	Gaps	0;
Qy	2	SKEPLRPCRPNATLAVEKGGCPVCTVNTTICAGTCPTMTRVLQGVLPALPOVCYCTR	61							
Db	1	SKEPLRPCRPNATLAVEKGGCPVCTVNTTICAGTCPTMTRVLQGVLPALPOVCYCTR	60							
Qy	62	DVRFESIRLPGCPRCVNPVSVYVALSCQALCRSTTDCGPKDHLTCDPDPDSSS	121							
Db	61	DVRFESIRLPGCPRCVNPVSVYVALSCQALCRSTTDCGPKDHLTCDPDPDSSS	120							
Qy	122	SKAPPPSLSPSRLPFGPSDT	141							
Db	121	SKAPPPSLSPSRLPFGPSDT	140							
RESULT 83										
ID	AAR15068	standard; Protein: 145 AA.								
AC	AAR15068;									
DT	11-FEB-1992	(first entry)								
DE	hcg/hFSH chimera, B8.									
EX	Glycoprotein hormone; fertility; immuno-castration.									
KW	immuno-contragestive; vaccine; human chorionic gonadotropin;									
KW	follicle stimulating hormone; FSH; CG;									
OS	Homo sapiens.									
PN	MO9116922-A.									
PD	14-NOV-1991.									
PF	07-MAY-1991;	91MO-US03162.								
PR	08-MAY-1990;	90US-0520703.								
PA	(UTNE-) UNIV MED NEW JERSEY.									
PI	Campbell RK, Moyle WR;									
XP	NPI: 1991-353528/48.									
XX	New glyco-protein hormone analogues - for inducing fertility as									
PT	immuno-castration agents, for suppressing reproductive system									
TI	development and as immuno-contragestive vaccines.									
Table 11;	Page 61;	94pp; English.								
XX	The sequence is an analogue of mature hCG beta subunit having									
CC	residues 86, 87, 89, 91 and 92 replaced by the corresponding									
CC	residues in the hCG protein. It was prepd. by site directed									
CC	mutagenesis of a cDNA sequence encoding the hCG beta subunit.									
CC	The chimeric hormone is capable of directing hormone binding to									
CC	both LH and FSH receptors and may be useful for the treatment of									
CC	infertility in men and women and the promotion of fertility in male									
CC	and female animals. (See AAR15043, AAR15061-R15125 and									
CC	AAR15161-R15198).									
Sequence	145 AA;									
Query Match	Score 746; DB 12; Length 145;									
Best Local Similarity	96.4%; Pred. No. 2,7e-60;									
Matches 135;	Conservative 0; Mismatches 5; Indels 0; Gaps 0;									
Qy	2	SKEPLRPCRPNATLAVEKGGCPVCTVNTTICAGTCPTMTRVLQGVLPALPOVCYCTR	61							
Db	1	SKEPLRPCRPNATLAVEKGGCPVCTVNTTICAGTCPTMTRVLQGVLPALPOVCYCTR	60							
Qy	62	DVRFESIRLPGCPRCVNPVSVYVALSCQALCRSTTDCGPKDHLTCDPDPDSSS	121							

Db 61 DVFESIRLPCPGVNVVAVATOCGCKRSTTDCGGPKDHLTCDPRFQSSS 120  
 QY 122 SKAPPSLPSPSLRPGSDT 141  
 XX ||||||||||||||||||  
 Db 121 SKAPPSLPSPSLRPGSDT 140  
 XX ||||||||||||||||||  
 RESULT 84  
 ID AAR15101 standard; Protein; 145 AA.  
 AC AAR15101;  
 XX  
 DT 11-FEB-1992 (first entry)  
 XX  
 DE hCG/BLH chimera, D5.  
 XX Glycoprotein hormone; immuno-castration;  
 XX human chorionic gonadotropin; vaccine; human chorionic gonadotropin;  
 KW luteinizing hormone, LH, CG, hCG.  
 XX Homo sapiens.  
 OS Bos taurus.  
 XX  
 XX WO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 XX immuno-castration agents, for suppressing reproductive system  
 XX development and as immuno-contragestive vaccines.  
 XX Table IV; Page 63; 94pp; English.  
 XX The sequence is an analogue of mature hCG beta subunit having  
 XX residues 74, 77, 79, 82 and 83 replaced by the corresponding  
 XX residues in the bovine LH protein. The chimeric hormone may be  
 XX useful for identifying residues which are important for binding to  
 XX the human receptor and may also have applications as an immunogen,  
 XX agonist and/or antagonist.  
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX Sequence 145 AA;  
 PS Query Match 96.0%; Score 746; DB 12; Length 145;  
 XX Best Local Similarity 96.4%; Pred. No. 2.7e-60;  
 XX Matches 135; Conservative 3; Mismatches 2; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAYEKEGCPVCITVTTCAGCTPTMRVLQGLPALPQVNCNR 61  
 Db 1 SKEPLRPRCPINATLAYEKEGCPVCITVTTCAGCTPTMRVLQGLPALPQVNCNR 60  
 QY 62 DVFESIRLPCPGVNVVAVATOCGCKRSTTDCGGPKDHLTCDPRFQSSS 121  
 XX ||||||||||||||||||  
 Db 61 DVFESIRLPCPGVNVVAVATOCGCKRSTTDCGGPKDHLTCDPRFQSSS 120  
 QY 122 SKAPPSLPSPSLRPGSDT 141  
 XX ||||||||||||||||||  
 Db 121 SKAPPSLPSPSLRPGSDT 140  
 RESULT 85  
 ID AAR15176 standard; Protein; 145 AA.  
 AC AAR15176;  
 XX  
 DT 11-FEB-1992 (first entry)  
 XX  
 DE hCG histidine substitution mutant, G8.  
 XX Glycoprotein hormone; human chorionic gonadotropin; disulphide.  
 XX Homo sapiens.  
 OS Homo sapiens.  
 XX WO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 XX immuno-castration agents, for suppressing reproductive system  
 XX development and as immuno-contragestive vaccines.  
 XX Table VIII; Page 67; 94pp; English.  
 XX The sequence is an analogue of mature hCG beta subunit having  
 XX residue 116 replaced by a Cys residue. This introduces an  
 XX additional cleavage site for CNBr, useful for determining the  
 XX disulphide bonds. This can be used to show that mutagenesis has  
 XX not altered the "normal" disulphide pattern of analogues, and for  
 XX examining protein folding.  
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX Sequence 145 AA;  
 PS Query Match 96.0%; Score 746; DB 12; Length 145;  
 XX Best Local Similarity 97.9%; Pred. No. 2.7e-60;  
 XX Matches 137; Conservative 3; Mismatches 3; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAYEKEGCPVCITVTTCAGCTPTMRVLQGLPALPQVNCNR 61  
 Db 1 SKEPLRPRCPINATLAYEKEGCPVCITVTTCAGCTPTMRVLQGLPALPQVNCNR 60  
 QY 62 DVFESIRLPCPGVNVVAVATOCGCKRSTTDCGGPKDHLTCDPRFQSSS 121  
 XX ||||||||||||||||||  
 Db 61 DVFESIRLPCPGVNVVAVATOCGCKRSTTDCGGPKDHLTCDPRFQSSS 120  
 QY 122 SKAPPSLPSPSLRPGSDT 141  
 XX ||||||||||||||||||  
 Db 121 SKAPPSLPSPSLRPGSDT 140  
 RESULT 86  
 ID AAR48385 standard; Protein; 145 AA.  
 AC AAR48385;  
 XX  
 DT 27-FEB-2001 (first entry)  
 XX  
 DE Human chorionic gonadotropin beta subunit structure I.  
 XX Human chorionic gonadotropin; HCG; beta subunit; abortive; antifertility;  
 KW cytotatic; vaccine; contraception; hormone related disease;  
 XX hormone-associated carcinoma.  
 XX

ID AAR15176 standard; Protein; 145 AA.  
 XX AAR15176;  
 XX  
 DT 11-FEB-1992 (first entry)  
 XX  
 DE hCG histidine substitution mutant, G8.  
 XX Glycoprotein hormone; human chorionic gonadotropin; disulphide.  
 XX Homo sapiens.  
 OS Homo sapiens.  
 XX WO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 XX immuno-castration agents, for suppressing reproductive system  
 XX development and as immuno-contragestive vaccines.  
 XX Table VIII; Page 67; 94pp; English.  
 XX The sequence is an analogue of mature hCG beta subunit having  
 XX residue 116 replaced by a Cys residue. This introduces an  
 XX additional cleavage site for CNBr, useful for determining the  
 XX disulphide bonds. This can be used to show that mutagenesis has  
 XX not altered the "normal" disulphide pattern of analogues, and for  
 XX examining protein folding.  
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX Sequence 145 AA;  
 PS Query Match 96.0%; Score 746; DB 12; Length 145;  
 XX Best Local Similarity 97.9%; Pred. No. 2.7e-60;  
 XX Matches 137; Conservative 3; Mismatches 3; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAYEKEGCPVCITVTTCAGCTPTMRVLQGLPALPQVNCNR 61  
 Db 1 SKEPLRPRCPINATLAYEKEGCPVCITVTTCAGCTPTMRVLQGLPALPQVNCNR 60  
 QY 62 DVFESIRLPCPGVNVVAVATOCGCKRSTTDCGGPKDHLTCDPRFQSSS 121  
 XX ||||||||||||||||||  
 Db 61 DVFESIRLPCPGVNVVAVATOCGCKRSTTDCGGPKDHLTCDPRFQSSS 120  
 QY 122 SKAPPSLPSPSLRPGSDT 141  
 XX ||||||||||||||||||  
 Db 121 SKAPPSLPSPSLRPGSDT 140  
 RESULT 86  
 ID AAR48385 standard; Protein; 145 AA.  
 AC AAR48385;  
 XX  
 DT 27-FEB-2001 (first entry)  
 XX  
 DE Human chorionic gonadotropin beta subunit structure I.  
 XX Human chorionic gonadotropin; HCG; beta subunit; abortive; antifertility;  
 KW cytotatic; vaccine; contraception; hormone related disease;  
 XX hormone-associated carcinoma.  
 XX

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OS Homo sapiens.
XX US6143305-A.
XX 07-NOV-2000.
XX
XX 06-JUN-1995; 95US-0471422.
XX
XX 25-AUG-1978; 78US-0936876.
XX 15-JUL-1987; 87US-0073748.
XX 26-AUG-1992; 92US-0835331.
XX 17-FEB-1989; 89US-0311331.
XX 16-MAY-1973; 73US-0357892.
XX 16-OCT-1973; 73US-0406821.
XX 24-DEC-1974; 75US-0492533.
XX 14-OCT-1974; 75US-0492533.
XX 16-JAN-1981; 81US-0112628.
XX 20-NOV-1981; 81US-0323690.
XX (OHIS ) UNIV OHIO STATE.
XX
XX Stevens VC.
XX WPI; 2001-023400/03.
XX
XX Antigenically modified polypeptide composition used as a vaccine
XX against human chorionic gonadotropin.
XX
XX Example 32; Column 18; 55pp; English.
XX
XX The present sequence is a fragment of the beta subunit of human
XX chorionic gonadotropin (hCG). It is given in a specification relating
XX to a vaccine composition capable of eliciting antibody formation against
XX hCG. The vaccine comprises an hCG polypeptide coupled to diphtheria
XX toxoid or tetanus toxoid and a vehicle comprising a mixture of mannide
XX and/or equine or equine or equine. The vaccine is useful for
XX contraception, abortion, treatment of reproductive disease states
XX and disorders and the treatment of hormone associated carcinomas.
XX
XX Sequence 145 AA:
XX
XX Query Match 96.0%; Score 746; DB 22; Length 145;
XX Best Local Similarity 97.9%; Pred. No. 2.7e-60;
XX Matches 137; Conservative 0; Mismatches 3; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRRCRPTNATLAVKEGCPVCIIVTTTICAGYCTMTRVLGVLPAQPVCNVR 61
XX DB 1 SKEPLRRCRPTNATLAVKEGCPVCIIVTTTICAGYCTMTRVLGVLPAQPVCNVR 60
XX
XX QY 62 DVRFESIRLPCGPGVNVSVAVALSQCACALCRSTTDCGPKDHPDLPDQSDSS 121
XX DB 61 ELRFASVRLPCGPGVNVSVAVALSQCACALCRSTTDCGPKDHPDLPDQSDSS 120
XX
XX QY 122 SKAPPSLPSPSLRPGSDT 141
XX DB 121 SKAPPSLPSPSLRPGSDT 140
XX
XX RESULT 87
XX AAR15100
XX ID AAR15100 standard; Protein; 145 AA.
XX AC AAR15100;
XX
XX DT 11-FEB-1992 (first entry)
XX
XX DE hCG/bLH chimera, D4.
XX
XX KW Glycoprotein hormone; immuno-castration;
XX human chorionic gonadotropin;
XX luteinizing hormone; LH; CG; bovine.
XX
XX OS Homo sapiens.
XX
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OS Bos taurus.
XX MO9116922-A.
XX
XX 14-NOV-1991.
XX
XX 07-MAY-1991; 91MO-0503162.
XX
XX 08-MAY-1990; 90US-0520703.
XX (UTNE-) UNIV MED NEW JERSEY.
XX
XX Campbell RK, Moyle WR;
XX WPI; 1991-353528/48.
XX
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-castration agents for suppressing reproductive system
XX development and as immuno-contragestive vaccines.
XX
XX Table IV; Page 63; 94pp; English.
XX
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 58, 60-62, 65 and 67 replaced by the corresponding
XX residues in the bovine LH protein. The chimeric hormone may be
XX useful for identifying residues which are important for binding to
XX the human chorionic gonadotropin receptor. Also have applications as an immunogen,
XX agonist and/or antagonist.
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX
XX Sequence 145 AA:
XX
XX Query Match 95.9%; Score 745; DB 12; Length 145;
XX Best Local Similarity 95.7%; Pred. No. 3.3e-60;
XX Matches 134; Conservative 3; Mismatches 3; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRRCRPTNATLAVKEGCPVCIIVTTTICAGYCTMTRVLGVLPAQPVCNVR 61
XX DB 1 SKEPLRRCRPTNATLAVKEGCPVCIIVTTTICAGYCTMTRVLGVLPAQPVCNVR 60
XX
XX QY 62 DVRFESIRLPCGPGVNVSVAVALSQCACALCRSTTDCGPKDHPDLPDQSDSS 121
XX DB 61 ELRFASVRLPCGPGVNVSVAVALSQCACALCRSTTDCGPKDHPDLPDQSDSS 120
XX
XX QY 122 SKAPPSLPSPSLRPGSDT 141
XX DB 121 SKAPPSLPSPSLRPGSDT 140
XX
XX RESULT 88
XX AAR15098
XX ID AAR15098 standard; Protein; 145 AA.
XX AC AAR15098;
XX
XX DT 11-FEB-1992 (first entry)
XX
XX DE hCG/bLH chimera, D2.
XX
XX KW Glycoprotein hormone; immuno-castration;
XX human chorionic gonadotropin;
XX luteinizing hormone; LH; CG; bovine.
XX
XX OS Homo sapiens.
XX Bos taurus.
XX MO9116922-A.
XX
XX 14-NOV-1991.
XX
XX 07-MAY-1991; 91MO-0503162.
XX
XX 08-MAY-1990; 90US-0520703.
XX
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XX (UYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI: 1991-353528/48.
XX New glyco-protein hormone analogues - for inducing fertility as
XX immunostimulators, for suppressing reproductive system
XX development and as immuno-contragastive vaccines.
XX Table IV: Page 63: 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 18, 22, 29, 30 and 32 replaced by the corresponding
XX residues in the bovine LH protein. The chimeric hormone may be
XX useful for identifying residues which are important for binding to
XX the human receptor and may also have applications as an immunogen,
XX as gonadotropin or as a contraceptive.
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX Sequence 145 AA;
Query Match 95.9%; Score 745; DB 12; Length 145;
Best Local Similarity 96.4%; Pred. No. 3.3e-60;
Matches 135; Conservative 1; Mismatches 4; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKEGCVITVTTCAGYCTPTMRVQLQVLPALPQVNCNR 61
DB 1 SKEPLRPRCPINATLAVEKEGCVITVTTCAGYCTPTMRVQLQVLPALPQVNCNR 60
QY 62 DYRFESIRLPGCPGVNPNVSVAVALSQCACLRSTTDCGPKDHPDLCDDPRFDSSS 121
DB 61 DYRFESIRLPGCPGVNPNVSVAVALSQCACLRSTTDCGPKDHPDLCDDPRFDSSS 120
QY 122 SKAPPSLPSPSLRPGSDT 141
DB 121 SKAPPSLPSPSLRPGSDT 140
RESULT 89
AAM27678
ID AAM27678 standard; protein: 145 AA.
XX AAM27678;
XX 12-JAN-1998 (first entry)
XX Chorionic gonadotrophin beta subunit amino-terminal loop mutant.
XX Human: chorionic gonadotrophin; chorionic gonadotrophin; beta-hCG;
XX beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;
XX contragestative medicament; cross-reactivity; luteinising hormone;
XX contraceptive; immunoassay; Kaposi sarcoma; inhibition;
XX neutralising antibody.
XX Homo sapiens.
XX Synthetic.
XX Key Location/Qualifiers
XX Misc-difference 20 /note= "wild type Lys replaced with Asn"
XX Misc-difference 21 /note= "wild type Glu replaced with Arg"
XX Misc-difference 22 /note= "wild type Gly replaced with Glu"
XX WO9704098-A2.
XX 06-FEB-1997.
XX 19-JUL-1996; 96WO-GB01717.
XX

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PR 19-JUL-1995; 95GB-0014816.
XX (DELV/) DELVES P J.
XX (ROIT/) ROITT I M.
XX Delves PJ, Lund T, Roitt IM;
XX WPI: 1997-132639/12.
XX Modified beta-human chorionic gonadotrophin proteins - useful as
XX contragestative vaccine
XX Example; Page -: 23pp; English.
XX The present sequence is the human chorionic gonadotrophin beta
XX subunit (beta-hCG), amino-terminal loop mutant Lys20Asn, Glu21Arg,
XX Gly22Glu, which can be used in the preparation of a contragestative
XX medicament. The modified beta-hCG has reduced cross-reactivity with
XX luteinising hormone (LH), as defined by the ability of both
XX proteins to react with anti-LH antibody. The modified beta-hCG can
XX be used as a contragestative in females. The vaccine in a hCG
XX specific immunoassay and for applications where hCG is active, e.g.
XX Kaposi sarcoma inhibition. The modified beta-hCG can produce, e.g.
XX neutralising antibodies to beta-hCG, which do not cross-react with
XX other natural hormones.
XX N.B. Sequence not given in the specification, but constructed using
XX the wild type beta-hCG sequence given in nature 307 959460, 37-40
XX (1984).
XX Sequence 145 AA;
Query Match 95.9%; Score 744; DB 18; Length 145;
Best Local Similarity 97.1%; Pred. No. 4e-60;
Matches 136; Conservative 0; Mismatches 4; Indels 0; Gaps 0;
QY 2 SKEPLRPRCPINATLAVEKEGCVITVTTCAGYCTPTMRVQLQVLPALPQVNCNR 61
DB 1 SKEPLRPRCPINATLAVEKEGCVITVTTCAGYCTPTMRVQLQVLPALPQVNCNR 60
QY 62 DYRFESIRLPGCPGVNPNVSVAVALSQCACLRSTTDCGPKDHPDLCDDPRFDSSS 121
DB 61 DYRFESIRLPGCPGVNPNVSVAVALSQCACLRSTTDCGPKDHPDLCDDPRFDSSS 120
QY 122 SKAPPSLPSPSLRPGSDT 141
DB 121 SKAPPSLPSPSLRPGSDT 140
RESULT 90
AAR15102
ID AAR15102 standard; Protein: 145 AA.
XX AAR15102;
XX 11-FEB-1992 (first entry)
XX hCG/bhH chimera, D6.
XX Glycoprotein hormone; immuno-castration;
XX immuno-contragestive; vaccine; human chorionic gonadotropin;
XX luteinising hormone; LH; CG; bovine.
XX Homo sapiens.
XX Bos taurus.
XX WO9116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991; 91MO-US03162.
XX 08-MAY-1990; 90US-0520703.
XX

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PA (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI: 1991-35328/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 XX immuno-castration agents, for suppressing reproductive system  
 XX development and as immuno-contragestive vaccines.  
 XX Table IV; Page 63; 94pp; English.  
 XX The sequence is an analogue of mature hCG beta subunit having  
 XX residues 89, 91, 92, 95 and 97 replaced by the corresponding  
 XX residues in the bovine LH protein. The chimeric hormone may be  
 XX useful for identifying residues which are important for binding to  
 XX the human receptor and may also have applications as an immunogen,  
 XX agonist and/or antagonist.  
 XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX Sequence 145 AA;  
 XX  
 Query Match 95.6%; Score 743; DB 12; Length 145;  
 Best Local Similarity 96.4%; Pred. No. Se 60; 4; Indels 0; Gaps 0;  
 Matches 135; Conservative 1; Mismatches 1;  
 QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPTRVRLQGVLPALPOVVCNVR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPTRVRLQGVLPALPOVVCNVR 60  
 QY 62 DVRFESIRLPGCGVNVVSVYVALSCQALCRSTTDCGPKDHPPLTCDPRFOQSSS 121  
 DB 61 DVRFESIRLPGCGVNVVSVYVALSCQALCRSTTDCGPKDHPPLTCDPRFOQSSS 120  
 QY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140  
 RESULT 91  
 AAR31006  
 ID AAR31006 standard; protein: 145 AA.  
 XX AAR31006;  
 XX 14-MAY-1993 (first entry)  
 XX Modified hCG beta-subunit - analogue "D".  
 XX hCG; glycoprotein hormone analogue; human infertility; LH; FSH;  
 XX luteinising hormone receptor; follicle stimulating hormone receptor;  
 XX vertebate; polycystic ovarian disease.  
 XX Homo sapiens.  
 XX Key Location/Qualifiers  
 XX Region 94..97 "non-hCG derived residues"  
 XX Region 94..97 /note- "D region - LH binding and specificity"  
 XX Region 100..106 /note- "G region - FSH binding and specificity"  
 XX MO9222568-A.  
 XX 23-DEC-1992.  
 XX 18-JUN-1992; 92NO-US05207.  
 XX 18-JUN-1991; 91US-0717151.  
 XX (UYNE-) UNIV MED NEW JERSEY.

PI Campbell RK, Moyle WR;  
 XX WPI: 1993-018070/02.  
 XX New alpha, beta-heterodimeric polypeptide deriva. - which bind to  
 XX luteinising and follicle stimulating hormone receptors, useful for  
 XX controlling the ratio of FSH to LH activity  
 XX Disclosure: Page 21; 98pp; English.  
 XX The sequence is that of a modified form of human chorionic gonadotrophin  
 XX (hCG), analogue "D", in which amino acids in the "D" and/or "G" regions  
 XX have been substituted resulting in changes in the binding specificity  
 XX and avidity of luteinising hormone (LH) and follicle stimulating  
 XX hormone (FSH) receptors. The chimeric hormone may be useful for  
 XX beta-heterodimeric polypeptide having an affinity to vertebate LH  
 XX and FSH receptors. Such an analogue can be prepared having a desired  
 XX ratio of FSH:LH activity. The polypeptide may be used for treating  
 XX human infertility or polycystic ovarian disease.  
 XX Sequence 145 AA;  
 XX  
 Query Match 95.6%; Score 743; DB 14; Length 145;  
 Best Local Similarity 96.4%; Pred. No. Se 60; 4; Indels 0; Gaps 0;  
 Matches 135; Conservative 1; Mismatches 1;  
 QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPTRVRLQGVLPALPOVVCNVR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCPTRVRLQGVLPALPOVVCNVR 60  
 QY 62 DVRFESIRLPGCGVNVVSVYVALSCQALCRSTTDCGPKDHPPLTCDPRFOQSSS 121  
 DB 61 DVRFESIRLPGCGVNVVSVYVALSCQALCRSTTDCGPKDHPPLTCDPRFOQSSS 120  
 QY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140  
 RESULT 92  
 AAR88923  
 ID AAR88923 standard; protein: 145 AA.  
 XX AAR88923;  
 XX 13-JUL-1996 (first entry)  
 XX HCG analogue-D beta-subunit.  
 XX hCG; human; chorionic gonadotropin; beta-subunit; heterodimer;  
 XX alpha-subunit; LH receptor; FSH receptor; LH; FSH; thyrotropin;  
 XX D-region; G-region; protein engineering; fertility; hormone;  
 XX follicle stimulating hormone; luteinising hormone; TSH;  
 XX ovulation; spermatogenesis.  
 XX Homo sapiens.  
 XX Key Location/Qualifiers  
 XX Region 1..93 /note- "HCG sequence"  
 XX Region 94..97 /note- "Human FSH D-region"  
 XX Region 98..145 /note- "HCG sequence"  
 XX US5508261-A.  
 XX 16-APR-1996.  
 XX 18-JUN-1991; 91US-0717151.  
 XX 21-JAN-1994; 94US-0184408.  
 XX 18-JUN-1991; 91US-0717151.

PR 18-AUG-1993; 93US-0108845.  
 XX 18-APR-1995; 95US-0425673.  
 XX (UTNE-) UNIV NEW JERSEY.  
 PI Campbell RK, Han Y, Macdonald GT, Moyle WR, Wang Y;  
 XX WPI: 1996-208744/21.  
 XX New alpha, beta-heterodimeric glycoprotein hormone polypeptide(s)  
 PT - having a non-naturally occurring beta-subunit derived from HCG,  
 PT LH, FSH and TSH  
 XX Example 1: Column 11-12; 27pp: English.  
 XX The sequence is an example of a glycoprotein hormone beta-chain  
 CC with altered binding affinity to LH receptor. The heterodimer  
 CC with altered binding affinity to LH receptor. The heterodimer  
 CC heterodimer preferably contains an HCG alpha-subunit and a chimeric  
 CC beta-subunit containing HCG, LH, FSH and/or thyrotropin residues.  
 CC Binding activity and specificity may be altered without disrupting  
 CC heterodimer formation or reaction with antibodies. The D-region is  
 CC HCG is most important for LH receptor binding, and the G-region is  
 CC most important for FSH binding. Analogue-D, with an FSH D-region  
 CC binds to an LH receptor with considerably lower potency than HCG,  
 CC and does not bind to LH receptors. The G-region may be  
 CC enhanced, COS-1 cells. The G-region may be enhanced with  
 CC polycystic ovary disease, or to increase spermatogenesis in  
 CC azoospermic males who have some circulating LH.  
 XX Sequence 145 AA:  
 SQ  
 Query Match 95.6%; Score 743; DB 17; Length 145;  
 Best Local Similarity 96.4%; Pred. No. 5e-60;  
 Matches 135; Conservative 1; Mismatches 4; Indels 0; Gaps 0;  
 QY 2 SKEPLAPRCPTNATLAVEKEGCPVCTVNTICAGYCTPTVRLQGVLPALPQVNCNR 61  
 DB 1 SKEPLAPRCPTNATLAVEKEGCPVCTVNTICAGYCTPTVRLQGVLPALPQVNCNR 60  
 QY 62 DYRFESIRLPGCPGVNPNVYVAVALSQCACLRSTTDCGPKDRHPTCDPFRQDSSS 121  
 DB 61 DYRFESIRLPGCPGVNPNVYVAVALSQCACLRSTTDCGPKDRHPTCDPFRQDSSS 120  
 QY 122 SKAPPSLPSPSLPGPSDT 141  
 DB 121 SKAPPSLPSPSLPGPSDT 140  
 RESULT 93  
 AAE04518  
 ID AAE04518 standard; Protein: 265 AA.  
 XX AAE04518;  
 AC AAE04518;  
 DT 04-SEP-2001 (first entry)  
 XX Human single chain gonadotropin analog no:1b.  
 XX Human; single chain gonadotropin analog no:1b; anti-infertility; drug;  
 KW peptide; the sequence is a single chain gonadotropin analog no:1b;  
 KW FSH; thyroid stimulating hormone; FSH; chorionic gonadotropin; CG;  
 KW glycoprotein; infertility; fusion protein; mutant; muten.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX Key Location/Qualifiers  
 FH Region 21..165  
 FT /note- "Corresponds to 1-145 amino acids of human  
 FT chorionic gonadotropin (CG) beta-subunit."  
 FT Misc-difference 33

FT /note- "Wild type Asn substituted with Xaa, Where Xaa  
 FT refers to Gln or other amino acid"  
 FT Misc-difference 50  
 FT /note- "Wild type Asn substituted with Xaa, Where Xaa  
 FT refers to Gln or other amino acid"  
 FT Misc-difference 58  
 FT /note- "Wild type Asn substituted with Xaa, Where Xaa  
 FT refers to Gln or other amino acid"  
 FT Misc-difference 99  
 FT /note- "Wild type Val substituted with Thr"  
 FT Region 166..173  
 FT /note- "Linker peptide"  
 FT Region 174..265  
 FT /note- "Corresponds to 1-92 amino acids of human single  
 FT chain gonadotropin alpha-subunit"  
 FT Misc-difference 225  
 FT /note- "Wild type Asn substituted with Xaa, Where Xaa  
 FT refers to Gln or other amino acid"  
 FT Misc-difference 251  
 FT /note- "Wild type Asn substituted with Xaa, Where Xaa  
 FT refers to Gln or other amino acid"  
 XX USG238890-B1.  
 XX 29-MAY-2001.  
 XX 25-AUG-1997; 97US-0918288.  
 PR 18-FEB-1994; 94US-0199382.  
 PR 12-AUG-1994; 94US-0289396.  
 PR 22-SEP-1994; 94US-0310590.  
 PR 04-NOV-1994; 94US-0334628.  
 PR 07-DEC-1994; 94US-0351591.  
 PR 07-JUN-1995; 95US-0475049.  
 PR 09-MAY-1997; 97US-0853524.  
 XX (UNITW) UNIV WASHINGTON.  
 XX Boime I, Moyle WR;  
 WPI: 2001-366474/38.  
 New DNA of RNA encoding single chain protein useful in treating  
 infertility, as aids in vitro fertilization techniques, or other  
 therapeutic methods associated with the native hormones .  
 Claim 9; Column -; 87pp: English.  
 The invention relates to human single chain forms of the glycoprotein  
 hormone quartet which is an agonist or antagonist of luteinizing hormone  
 (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone  
 (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers  
 having identical alpha subunits and differing beta subunits. The agonist  
 forms of single chain hormones are used in treating infertility, as aids  
 in vitro fertilization techniques, and other therapeutic methods  
 associated with the native hormones. The single chain hormones are useful  
 as reagents in a manner similar to heterodimers, as diagnostic tools to  
 detect the presence of antibodies with respect to the native proteins in  
 biological samples, as control reagents in assay kits for assessing the  
 levels of these hormones in various samples, in detecting and purifying  
 receptors to which the native hormones bind. The single chain hormones  
 are used as immunogens to produce antibodies. The single chain hormones  
 are used as antigens to produce antibodies. They are used as purification tools for  
 isolation of subsequent preparations of these materials and to monitor  
 levels of single chain hormones administered as drugs. The single chain  
 glycoproteins are used to generate antibodies specifically immunoreactive  
 with these new compounds, as substitutes for the heterodimeric forms of  
 hormones. The present sequence is human single chain gonadotropin analog  
 no:1b related to the invention. Analog no:1b is a fusion protein  
 consisting of human chorionic gonadotropin (CG) beta-subunit (1-145 amino  
 acids) fused to human single chain gonadotropin alpha-subunit (1-92 amino  
 acids) by a linker sequence. This analog serves as a useful starting  
 compound for complete directed vaccine design and for the development of

CC hormone-specific vaccines for use in humans.  
 CC Note: the present sequence is not shown in the specification, but is  
 CC derived from the human single chain gonadotropin analog no.1 shown  
 CC as SEQ ID NO: 3, in Figure 5 of the specification (A&E0474).  
 XX  
 SQ Sequence 265 AA;

Query Match 95.6%; Score 743; DB 22; Length 265;  
 Best Local Similarity 97.1%; Pred. No. 9.2e-60;  
 Matches 136; Conservative 0; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTMTTRVLQGVLPALPOVQVNYR 61  
 DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTMTTRVLQGVLPALPOVQVNYR 80  
 OY 62 DYRFESIRLPGCPRGVNPVYVAVALSCQALCRSTTDCGPKORHPLTCDPRQDSSS 121  
 DB 81 DYRFESIRLPGCPRGVNPVYVAVALSCQALCRSTTDCGPKORHPLTCDPRQDSSS 140  
 OY 122 SKAPPSLPSPRLPGPSDT 141  
 DB 141 SKAPPSLPSPRLPGPSDT 160

RESULT 94  
 AAR15063  
 ID AAR15063 standard; Protein; 145 AA.  
 XX  
 AC AAR15063;  
 XX  
 DT 11-FEB-1992 (first entry)  
 XX  
 DE hCG/hFSH chimera, B3.  
 XX  
 XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragester; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; G;  
 XX Homo sapiens.  
 XX  
 PN WO9116922-A.  
 XX  
 PD 14-NOV-1991.  
 XX  
 PF 07-MAY-1991; 91MO-US031162.  
 XX  
 XX 08-MAY-1990; 90US-0520703.  
 XX  
 PA (UYNE-) UNIV MED NEW JERSEY.  
 XX  
 PI Campbell RK, Moyle WR;  
 XX  
 DR WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragesteric vaccines.  
 XX  
 Table II; Page 61; 94pp; English.  
 XX  
 CC The sequence is an analogue of mature hCG beta subunit having  
 CC residues 39, 41, 42 and 43 replaced by the corresponding  
 CC residues in the hFSH protein. It was prep. by site directed  
 CC mutagenesis of a cDNA sequence encoding the hCG beta subunit.  
 CC The chimeric hormone is capable of directing hormone binding to  
 CC both LH and FSH receptors and may be useful for the treatment of  
 CC infertility in men and women and the promotion of fertility in male  
 CC and female animals. (See AAR15043, AAR15061-R15125 and  
 CC AAR15161-R15198).  
 XX  
 SQ Sequence 145 AA;

Query Match 95.4%; Score 741; DB 12; Length 145;

Best Local Similarity 97.1%; Pred. No. 7.6e-60;  
 Matches 136; Conservative 0; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTMTTRVLQGVLPALPOVQVNYR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTCAGYCTMTTRVLQGVLPALPOVQVNYR 60  
 OY 62 DYRFESIRLPGCPRGVNPVYVAVALSCQALCRSTTDCGPKORHPLTCDPRQDSSS 121  
 DB 61 DYRFESIRLPGCPRGVNPVYVAVALSCQALCRSTTDCGPKORHPLTCDPRQDSSS 120  
 OY 122 SKAPPSLPSPRLPGPSDT 141  
 DB 121 SKAPPSLPSPRLPGPSDT 140

RESULT 95  
 AAY87479  
 ID AAY87479 standard; peptide; 145 AA.  
 XX  
 AC AAY87479;  
 XX  
 DT 18-JUL-2000 (first entry)  
 XX  
 DE Human chorionic gonadotropin beta subunit.  
 XX  
 KW Human chorionic gonadotropin beta subunit; hCG-beta; epitope homopolymer;  
 KW immunogen; antibody production; immunocontraception; abortifacient;  
 KW vaccine; fertility control.  
 XX  
 OS Homo sapiens.  
 XX  
 FH Key Location/Qualifiers  
 FT Misc-difference 37  
 FT Misc-difference /label- unknown  
 FT Misc-difference 59  
 FT Misc-difference /label- unknown  
 FT Misc-difference 82  
 FT Misc-difference /label- unknown  
 XX  
 PN US6039948-A.  
 XX  
 PD 21-MAR-2000.  
 XX  
 PF 06-JUN-1995; 95US-0469043.  
 XX  
 XX 25-AUG-1978; 78US-0916876.  
 PR 25-JUL-1977; 78US-0916876.  
 PR 25-JUL-1977; 90US-0916876.  
 PR 17-FEB-1989; 88US-0311331.  
 PR 07-MAY-1973; 73US-0157892.  
 PR 16-OCT-1973; 73US-0406821.  
 PR 22-APR-1974; 74US-0462955.  
 PR 14-OCT-1975; 75US-0622031.  
 PR 16-JAN-1980; 80US-0112628.  
 PR 20-NOV-1981; 81US-0323690.  
 PR 04-MAR-1983; 83US-0472190.  
 PR 19-MAY-1983; 83WO-US000777.  
 PR 02-NOV-1984; 84US-0667863.  
 XX  
 XX (OHIS ) UNIV OHIO STATE.  
 XX  
 XX Stevens VC;  
 PI  
 DR WPI; 2000-270119/23.  
 XX  
 XX Antigenically modified polypeptides useful for treating cancer,  
 PT hypertension, diabetes and associated vascular diseases comprises  
 PT immunogenic polypeptides conjugated to carrier moieties -  
 XX  
 PS Example VIII; Column 18; 56pp; English.  
 XX  
 CC The invention relates to a polypeptide linear homopolymer comprising

CC three or more peptide monomers which may be used as an  
 CC immunocontraceptive and/or abortifacient. The peptide monomers are  
 CC peptides derived from the C-terminal portion of the human chorionic  
 CC gonadotropin beta subunit (hCG-beta) comprising either residues 105-145  
 CC or residues 111-145 of hCG-beta (hA87480). By  
 CC themselves the peptide monomers are capable of inducing the  
 CC homopolymer is capable of inducing anti-hCG antibody production. hCG  
 CC plays a role in the maintenance of pregnancy, and has also been shown to  
 CC induce ovulation and stimulate corpus luteum function. Anti-hCG  
 CC antibodies raised against the homopolymer of the invention are not  
 CC cross-reactive with luteinizing hormone (LH). The first 110 residues of  
 CC hCG-beta are virtually identical to those of LH, and prior art anti-hCG  
 CC antibodies have had significant cross-reactivity with LH. The anti-hCG  
 CC antibodies are thought to cause early abortion by neutralising CG in the  
 CC peripheral blood and disrupting trophic hormone support to the corpus  
 CC luteum. The pregnancy is disrupted almost immediately after  
 CC administration of the homopolymer. The first 110 residues of the  
 CC control of female fertility. The hCG peptide homopolymer is therefore useful in the  
 CC subunit of human chorionic gonadotropin which was used in an  
 CC exemplification of the present invention.

XX Sequence 145 AA:  
 Query Match 95.4%; Score 741; DB 21; Length 145;  
 Best Local Similarity 97.1%; Pred. No. 7; 6e-60;  
 Matches 136; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

QY 2 SKEPLRCPINATLAVEKCPVCITVNTTICAGYCTPTMTVRLVQGLPALPQVNCNR 61  
 Db 1 SKEPLRCPINATLAVEKCPVCITVNTTICAGYCTPTMTVRLVQGLPALPQVNCNR 60  
 QY 62 DVRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGGPKDHPILTCDDPRFQSSS 121  
 Db 61 DVRFESIRLPCPGVNPVYVAVALSCQALCRSTTDCGGPKDHPILTCDDPRFQSSS 120  
 QY 122 SKAPPSLPSRLGPSDT 141  
 Db 121 SKAPPSLPSRLGPSDT 140

RESULT 96  
 AAY43275  
 ID AAY43275 standard; Protein: 204 AA.  
 AC AAY43275;  
 XX 19-JAN-2000 (first entry)  
 DE Human CG beta subunit-Jun fusion protein sequence.  
 KW Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;  
 KW beta subunit; therapy; Jun.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX W09953065-A1.  
 XX 21-OCT-1999.  
 XX 13-APR-1999; 99WO-US08018.  
 XX 14-APR-1998; 98US-0059625.  
 XX (UYNE-J) UNIV NEW JERSEY.  
 XX Moyle WR;  
 XX WPI: 1999-620431/53.  
 DR N-PS06; A021751.

XX Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins -  
 XX Example 3; Fig 13; 73pp; English.  
 CC This sequence represents a fusion protein of the human chorionic  
 CC gonadotropin (hCG) beta subunit and Jun. The invention relates to a  
 CC method of forming a cysteine knot protein (I) having alpha and  
 CC beta-subunits comprising attaching a dimerisation domain (DD) to either  
 CC the N-termini of both subunits or the N-terminus of the alpha-subunit and  
 CC to the C-terminus of the beta-subunit and dimerising the products to form  
 CC a heterodimeric protein analog (II). The method is used to produce  
 CC analogues (agonists or antagonists) of deglycosylated glycoprotein  
 CC hormones, potentially useful, e.g. for treating infertility where caused  
 CC by polycystic ovarian disease (associated with excessive levels of  
 CC lutealising hormone). The products are particularly suitable for use as  
 CC immunogens (e.g. to elicit a DD containing highly antigenic amino  
 CC acid sequences). Attachment of a DD (which may be removed later)  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC (and thus receptor-binding and immunogenic properties) to native dimers,  
 CC and allows the combination of subunits that would otherwise combine  
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC formation of homodimers. Heterodimers have longer circulation times in  
 CC vivo than individual subunits.

XX Sequence 204 AA:  
 Query Match 95.2%; Score 740; DB 20; Length 204;  
 Best Local Similarity 99.3%; Pred. No. 1.3e-59;  
 Matches 135; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 6 LRPCRPIATLAVEKCPVCITVNTTICAGYCTPTMTVRLVQGLPALPQVNCNDRVF 65  
 Db 64 LRPCRPIATLAVEKCPVCITVNTTICAGYCTPTMTVRLVQGLPALPQVNCNDRVF 123  
 QY 66 ESIRLPCPGVNPVYVAVALSCQALCRSTTDCGGPKDHPILTCDDPRFQSSSKAP 125  
 Db 124 ESIRLPCPGVNPVYVAVALSCQALCRSTTDCGGPKDHPILTCDDPRFQSSSKAP 183  
 QY 126 PPSLPSRLGPSDT 141  
 Db 184 PPSLPSRLGPSDT 199

RESULT 97  
 AAW33358  
 ID AAW33358 standard; Protein: 307 AA.  
 AC AAW33358;  
 XX 19-MAR-1998 (first entry)  
 DE TBP(20-161)/hCG-beta fusion protein.  
 KW Fusion protein; thrombopoietin; TPO; human chorionic gonadotropin;  
 KW beta subunit; hCG-beta.  
 XX Homo sapiens.  
 OS Key  
 XX Key 279.1202  
 XX CDS /\*tag- a  
 XX W09730161-A1.  
 XX 21-AUG-1997.  
 XX 20-FEB-1997; 97WO-US02315.  
 XX 20-FEB-1996; 96US-0011936.

PA (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.

XX Campbell RK, Chappel SC, Jameson BA;

XX WPI: 1997-425036/39.

XX N-PSDB; ANT94008.

XX Hybrid dimeric protein comprising two co-expressed units - each  
PT based on receptor or ligand and a subunit of a heterodimeric  
PT hormone, especially FSH, for inducing follicular maturation

XX Example; Pages 34-35; 60pp; English.

XX A novel fusion protein comprises 2 dimer forming co-expressed amino  
CC acid sequences, each consisting of a homodimeric or heterodimeric  
CC receptor chain or ligand, with ligand-receptor binding activity,  
CC heterodimeric protein hormone capable of forming a heterodimer with  
CC the hormone's other subunits. The fusion protein, e.g. the  
CC thrombopoietin (TPO)/human chorionic gonadotropin-beta subunit  
CC (hCG-beta) fusion protein denoted by the present sequence,  
CC significantly increases the biological activity of the hormone  
CC component, reducing the requirement for hormone itself and the  
CC number of injections needed.

XX Sequence 307 AA;

Query Match 95.2%; Score 740; DB 18; Length 307;  
Best Local Similarity 100.0%; Pred. No. 2e-59;  
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 8 PRCPINATLAVEREGCPVCTVNTTICAGTCPTMTVLQGLPALPOVVCNRYDRVES 67

DB 169 PRCPINATLAVEREGCPVCTVNTTICAGTCPTMTVLQGLPALPOVVCNRYDRVES 228

OY 68 IRLPCGPGVNPVSYAVALSQCALCRSTTDCGKHPLTCDDPRFQSSSKAPPP 127

DB 229 IRLPCGPGVNPVSYAVALSQCALCRSTTDCGKHPLTCDDPRFQSSSKAPPP 288

OY 128 SLPSRLPGPST 141

DB 289 SLPSRLPGPST 302

RESULT 98

AW33360

XX AAW33360 standard; Protein; 336 AA.

XX AC AAW33360;

XX 19-MAR-1998 (first entry)

XX TBP(20-190)/hCG-beta fusion protein.

XX Fusion protein; thrombopoietin; TPO; human chorionic gonadotropin;

XX beta subunit; hCG-beta.

XX Homo sapiens.

XX WO9730161-A1.

XX 21-AUG-1997.

XX 20-FEB-1997; 97WO-US02315.

XX 20-FEB-1996; 96US-0011936.

XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.

XX Campbell RK, Chappel SC, Jameson BA;

XX WPI: 1997-425036/39.

XX N-PSDB; ANT94022.

XX

XX Hybrid dimeric protein comprising two co-expressed units - each  
PT based on receptor or ligand and a subunit of a heterodimeric  
PT hormone, especially FSH, for inducing follicular maturation

XX Example; Pages 39-40; 60pp; English.

XX A novel fusion protein comprises 2 dimer forming co-expressed amino  
CC acid sequences, each consisting of a homodimeric or heterodimeric  
CC receptor chain or ligand, with ligand-receptor binding activity,  
CC bound directly or via a peptide linker to a subunit of a  
CC heterodimeric protein hormone capable of forming a heterodimer with  
CC the hormone's other subunits. The fusion protein, e.g. the  
CC thrombopoietin (TPO)/human chorionic gonadotropin-beta subunit  
CC (hCG-beta) fusion protein denoted by the present sequence,  
CC significantly increases the biological activity of the hormone  
CC component, reducing the requirement for hormone itself and the  
CC number of injections needed.

XX Sequence 336 AA;

Query Match 95.2%; Score 740; DB 18; Length 336;  
Best Local Similarity 100.0%; Pred. No. 2.2e-59;  
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 8 PRCPINATLAVEREGCPVCTVNTTICAGTCPTMTVLQGLPALPOVVCNRYDRVES 67

DB 198 PRCPINATLAVEREGCPVCTVNTTICAGTCPTMTVLQGLPALPOVVCNRYDRVES 257

OY 68 IRLPCGPGVNPVSYAVALSQCALCRSTTDCGKHPLTCDDPRFQSSSKAPPP 127

DB 258 IRLPCGPGVNPVSYAVALSQCALCRSTTDCGKHPLTCDDPRFQSSSKAPPP 317

OY 128 SLPSRLPGPST 141

DB 318 SLPSRLPGPST 331

RESULT 99

AAR15097

XX AAR15097 standard; Protein; 145 AA.

XX AC AAR15097;

XX 11-FEB-1992 (first entry)

XX hCG/BLH chimera, DL.

XX Glycoprotein hormone; immuno-castration;

XX immuno-contragestive; vaccine; Human chorionic gonadotropin;

XX luteinizing hormone; LH; CG; Bovine.

XX Homo sapiens.

XX Bos taurus.

XX WO9116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UTNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI: 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as

XX immuno-castration agents, for suppressing reproductive system

XX development and as immuno-contragestive vaccines.

XX

## PS Table IV; Page 63; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 1, 2, 9, 10, 16, and 21 replaced by the corresponding  
 CC residues in the hCG beta subunit. The chimeric hormone  
 CC is useful for identifying residues which are important for binding to  
 CC the human receptor and may also have applications as an immunogen,  
 CC agonist and/or antagonist.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 145 AA;

Query Match 95.1%; Score 739; DB 12; Length 145;  
 Best Local Similarity 95.7%; Pred. No. 1.4e-59;  
 Matches 134; Conservative 2; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLPRCPINATLAVERKCPVCITVNTTICAGYCTPTMRVLQGVLPALPQVYCNVR 61  
 DB 1 SKEPLPRCPINATLAVERKCPVCITVNTTICAGYCTPTMRVLQGVLPALPQVYCNVR 60  
 OY 62 DYFESIRLPGCPGVNPNVYVAVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 121  
 DB 61 DYFESIRLPGCPGVNPNVYVAVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 120  
 OY 122 SKAPPSLPSPSLPQSDT 141  
 DB 121 SKAPPSLPSPSLPQSDT 140

## RESULT 100

AAR15066  
 ID AAR15066 standard; Protein: 145 AA.

XX AAR15066;

DT 11-FEB-1992 (first entry)

XX hCG/hFSH chimera, B6.

XX Glycoprotein hormone: fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG;

XX Homo sapiens.

XX WO9116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI; 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-contraction agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.

XX Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 59-64, 66, 67, and 69 replaced by the corresponding  
 CC residues in the hFSH protein. It was prep. by site directed  
 CC mutagenesis of a cDNA sequence encoding the hCG beta subunit.  
 CC The chimeric hormone is capable of directing hormone binding to  
 CC both LH and FSH receptors and may be useful for the treatment of  
 CC infertility in men and women and the promotion of fertility in male  
 CC and female animals. (See AAR15043, AAR15061-R15125 and

## CC AAR15161-R15198).

XX Sequence 145 AA;

Query Match 95.0%; Score 738; DB 12; Length 145;  
 Best Local Similarity 93.6%; Pred. No. 1.4e-59;  
 Matches 131; Conservative 8; Mismatches 1; Indels 0; Gaps 0;

OY 2 SKEPLPRCPINATLAVERKCPVCITVNTTICAGYCTPTMRVLQGVLPALPQVYCNVR 61  
 DB 1 SKEPLPRCPINATLAVERKCPVCITVNTTICAGYCTPTMRVLQGVLPALPQVYCNVR 60  
 OY 62 DYFESIRLPGCPGVNPNVYVAVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 121  
 DB 61 ELVETVRVPCGPGVNPVYVAVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 120  
 OY 122 SKAPPSLPSPSLPQSDT 141  
 DB 121 SKAPPSLPSPSLPQSDT 140

## RESULT 101

AAR15089  
 ID AAR15089 standard; Protein: 145 AA.

XX AAR15089;

DT 11-FEB-1992 (first entry)

XX hCG/hTSH chimera, C2.

XX Glycoprotein hormone: fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW thyroid stimulating hormone; TSH; CG;

XX Homo sapiens.

XX WO9116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI; 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-contraction agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.

XX Table III; Page 62; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 20-22, 24, 25, 27 and 29 replaced by the corresponding  
 CC residues in the hFSH protein. The chimeric hormone may be useful  
 CC for the treatment of hyperthyroidism.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 145 AA;

Query Match 95.0%; Score 738; DB 12; Length 145;  
 Best Local Similarity 95.0%; Pred. No. 1.4e-59;  
 Matches 133; Conservative 3; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLPRCPINATLAVERKCPVCITVNTTICAGYCTPTMRVLQGVLPALPQVYCNVR 61  
 DB 1 SKEPLPRCPINATLAVERKCPVCITVNTTICAGYCTPTMRVLQGVLPALPQVYCNVR 60

OY 62 DVRFESIRLPGCGRGVNVVSYAVALSQCACLRSTTDCGPKDHPHLCDDPRFQDSSS 121  
DB 61 DVRFESIRLPGCGRGVNVVSYAVALSQCACLRSTTDCGPKDHPHLCDDPRFQDSSS 120  
OY 122 SKAPPSLPSPRLPGSDT 141  
DB 121 SKAPPSLPSPRLPGSDT 140

## RESULT 102

AAR15091  
ID AAR15091 standard; Protein: 145 AA.

XX AAR15091;  
XX 11-FEB-1992 (first entry)  
XX hCG/hTSH chimera, C4.  
XX Glycoprotein hormone; fertility; immuno-castration;  
KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
KW thyroid stimulating hormone; TSH; CG;  
XX Homo sapiens.

XX W09116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91MO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI; 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as  
PT immuno-castration agents, for suppressing reproductive system  
PT development and as immuno-contragestive vaccines.  
XX Table III; Page 62; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
CC residues 62-69 replaced by the corresponding residues in the hTSH  
CC protein. The chimeric hormone may be useful as a TSH antagonist  
CC at the endometrium, thyroid and pituitary.  
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 145 AA:

Query Match 95.0%; Score 738; DB 12; Length 145;  
Best Local Similarity 94.3%; Pred. No. 1.4e-59;  
Matches 132; Conservative 4; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGVLPALPQVYCNR 61  
DB 1 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGVLPALPQVYCNR 60  
OY 62 DVRFESIRLPGCGRGVNVVSYAVALSQCACLRSTTDCGPKDHPHLCDDPRFQDSSS 121  
DB 61 DVRFESIRLPGCGRGVNVVSYAVALSQCACLRSTTDCGPKDHPHLCDDPRFQDSSS 120

OY 122 SKAPPSLPSPRLPGSDT 141

DB 121 SKAPPSLPSPRLPGSDT 140

## RESULT 103

AAR15062  
ID AAR15062 standard; Protein: 145 AA.

XX AAR15062;  
XX 11-FEB-1992 (first entry)  
XX hCG/hFSH chimera, B2.  
XX Glycoprotein hormone; fertility; immuno-castration;  
KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
KW follicle stimulating hormone; FSH; CG;  
XX Homo sapiens.

XX W09116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91MO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI; 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as  
PT immuno-castration agents, for suppressing reproductive system  
PT development and as immuno-contragestive vaccines.  
XX Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
CC residues 22, 24, 25, 28, 29 and 33 replaced by the corresponding  
CC residues in the hFSH protein. It was pred. by site directed  
CC mutagenesis of a chimeric sequence encoding the hCG beta subunit  
CC and the hFSH protein. The chimeric hormone may be useful to  
CC both LH and FSH receptors and may be useful for the treatment of  
CC infertility in men and women and the promotion of fertility in male  
CC and female animals. (See AAR15043, AAR15061-R15125 and  
CC AAR15161-R15198).

XX Sequence 145 AA:

Query Match 94.7%; Score 736; DB 12; Length 145;  
Best Local Similarity 95.7%; Pred. No. 2.1e-59;  
Matches 134; Conservative 2; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGVLPALPQVYCNR 61  
DB 1 SKEPLRPRCPINATLAVEKEGCPVITNTTICAGYCPMTVRVLOGVLPALPQVYCNR 60  
OY 62 DVRFESIRLPGCGRGVNVVSYAVALSQCACLRSTTDCGPKDHPHLCDDPRFQDSSS 121  
DB 61 DVRFESIRLPGCGRGVNVVSYAVALSQCACLRSTTDCGPKDHPHLCDDPRFQDSSS 120

OY 122 SKAPPSLPSPRLPGSDT 141

DB 121 SKAPPSLPSPRLPGSDT 140

## RESULT 104

AAR27683  
ID AAR27683 standard; Protein: 145 AA.

XX AAR27683;

XX 12-JAN-1998 (first entry)

XX Chorionic gonadotropin beta subunit carboxy-terminal loop mutant.  
XX Human; chorionic gonadotropin; chorionic gonadotropin; beta-hCG;  
KW

KW beta subunit; carboxy-terminal loop; mutant; reduction; vaccine;  
 KW contragestative; cross-reactivity; luteinising hormone;  
 KW neutralising antibody.

XX Homo sapiens.  
 OS Synthetic.

XX Key Location/Qualifiers

FT Misc-difference 68 /note= "wild type Arg replaced with Glu"  
 FT Misc-difference 74 /note= "wild type Arg replaced with Ser"  
 FT Misc-difference 75 /note= "wild type Gly replaced with His"  
 FT Misc-difference 79 /note= "wild type Val replaced with His"

XX WO9704098-A2.

XX PD 06-FEB-1997.

XX PF 19-JUL-1996; 96WO-G801717.

XX PR 19-JUL-1995; 95CB-0014816.

XX (DELV/) DELVES P. J.

XX (ROIT/) ROITT I. M.

XX PI Delves PJ, Lund T, Roitt IM;

XX DR WPI: 1997-132639/12.

XX Modified beta-human chorionic gonadotrophin proteins - useful as  
 PT contragestative vaccine

XX Example; Page -: 23pp; English.

XX The present sequence is the human chorionic gonadotrophin beta  
 CC subunit (beta-hCG), carboxy-terminal loop mutant Arg68Glu,  
 CC Arg74Ser, Gly75His, Val79His, which can be used in the preparation  
 CC of a contragestative medicament. The modified beta-hCG has reduced  
 CC cross-reactivity with luteinising hormone (LH), as defined by the  
 CC ability of both proteins to react with the same antibody. The  
 CC modified beta-hCG can be used as a contraceptive in females, in a  
 CC vaccine, in a hCG specific immunoassay and for applications where  
 CC hCG is active, e.g. Kaposi sarcoma inhibition. The modified  
 CC beta-hCG can produce neutralising antibodies to beta-hCG, which do  
 CC not cross-react with other hCG subunits.  
 CC N.B. Sequence not given in the specification, but constructed using  
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40  
 CC (1984).

XX Sequence 145 AA:

Query Match 94.7%; Score 736; DB 18; Length 145;  
 Best Local Similarity 96.4%; Pred. No. 2.le-59;  
 Matches 135; Conservative 0; Mismatches 5; Indels 0; Gaps 0;

OY 2 SKEPLPRCPINATLAVKSGCPVCTVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 61

DB 1 SKEPLPRCPINATLAVKSGCPVCTVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 60

OY 62 DYRFESIRLPCPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDLTCDPRFQDSSS 121

DB 61 DYRFESIRLPCPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDLTCDPRFQDSSS 120

OY 122 SKAPPSLPSPSLRPGSDT 141

DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 105

XX Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;

AAR15116  
 ID AAR15116 standard; Protein; 145 AA.

XX AAR15116;

DT 11-FEB-1992 (first entry)

XX hCG/eLH chimera, A3.

XX Glycoprotein hormone; immuno-castration;

KW immuno-contragestive; vaccine; human chorionic gonadotropin;

KW luteinising hormone; LH; CG.

XX Homo sapiens.

XX WO9116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91MO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI: 1991-353528/48.

PT New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.

XX Table VI: Page 65; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 77, 82, 83, 89, 92 and 99 replaced by the corresponding  
 CC residues in the human LH protein. The human LH hormone may be  
 CC used to induce fertility in male and female animals.  
 CC Promotion of fertility in male and female animals.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 145 AA:

Query Match 94.6%; Score 735; DB 12; Length 145;  
 Best Local Similarity 95.0%; Pred. No. 2.6e-59;  
 Matches 133; Conservative 3; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLPRCPINATLAVKSGCPVCTVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 61

DB 1 SKEPLPRCPINATLAVKSGCPVCTVTTCAGYCPMTVRVLOGVLPALPOVVCNVR 60

OY 62 DYRFESIRLPCPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDLTCDPRFQDSSS 121

DB 61 DYRFESIRLPCPCPGVNPVYVAVALSCQALCRSTTDCGPKDHPDLTCDPRFQDSSS 120

OY 122 SKAPPSLPSPSLRPGSDT 141

DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 106

AAR15109

ID AAR15109 standard; Protein; 145 AA.

XX AAR15109;

DT 11-FEB-1992 (first entry)

XX hCG/eLH chimera, E1.

XX Glycoprotein hormone; immuno-castration;

KW immuno-contragestive; vaccine; human chorionic gonadotropin;



```
FT
/label= hCG beta subunit (1-145)
```

FT	Misc-difference 33
FT	"wild-type Asn at position 13 of the beta-
FT	/note= subunit is opt. replaced by another amino
FT	

acid (esp. Glu) to remove a glycosylation site<sup>8</sup>

FT Misc-difference 50

FT subunit is opt. replaced by another amino

area (esp. 500) to remove a 9-10-1000000 site"

FT misc-difference 70 /note= "Arg corresponds to CCG codon"

FT MISC-difference 98  
FT /note= "wild-type Pro at position 78 of the beta-

FT subunit can be replaced by another amino acid  
FT to agree with the glycosylation site motif."

```

FT  Misc-difference 99
FT
FT  /note= 'wild-type Val at position 79 of the beta-

```

FT subunit is replaced by Thr to agree with the glycosylation site motif"

```
FT Region
166..173
/label= linker
```

FT	Region	174..265	/label= Gonadotropin alpha subunit (1-92)
FT			

ET	Misc-difference 225	/note= "wild-type Aen at position 52 of the alpha-
ET		

FT subunit is opt. replaced by another amino acid (asn, ala) to remove a glycosylation

13C NMR spectra of 14C-labeled 1,4-bis(2,4,6-trimethylphenyl)-2,5-bis(4-methylphenyl)benzidine (14C-TPB) and 14C-TPB/TPB mixture.

/note= "wild-type Asn at position 78 of the alpha-

FT acid (esp. Gln) to remove a glycosylation

XX 13  
2176

PN MU9322390-A1.  
XX

PD 24-AUG-1995.  
XX

PF 17-FEB-1995; 95WO-US02067.  
XX

PR 18-FEB-1994; 94US-0199382.  
XX

PA (SENS-) SENS-TEST.  
yy

PI MOYLE WR;

DR WPI; 1995-302553/39.

PT Methods for altering fertility in mammals, esp. humans - e.g.

PT: circulating glyco:protein hormones having lutropin activity

PS Example 25; Fig 6 and Page 60; 102pp; English.

CC The single-chain gonadotropin analogue 1b (human CG-beta(1-145))

CC [N13X,N30X,P78X,V79T]-linker-human CG-alpha(1-92)[N52X,N78X] 18  
CC an example of a chimeric glycopeptide hormone having an extra

CC glycosylation site. Addition of oligosaccharides has a positive effect on stability of hormones in circulation and can be used to

CC prevent unwanted antibody or receptor interactions. The present CC analogue has anti-lutealising hormone (lutronin) activity and can

CC be used for facilitating ovulation, terminating pregnancy and reducing androgen secretion

XX  
XX  
XX

[illegible]

Query Match 94.5%; Score 734; DB 16; Length 263;  
Best Local Similarity 96.4%; Pred. No. 6e-59;

Matches 135; Conservative 0; Mismatches 3; Indels 0; Caps

QY 2 SKEPLRPRCPINATLAVENECSPVCITVNTTICAGYCPMTTRVLQGVLPALPQWCNRY 61

```
|||||
Db 21 SKEPLPRCPRIATLAVEKGCPCVITVTTTICAGYCTMTNRLQGLALPQVVCNRYR 80
Qy 62 DVRFESIRLPGCPGVNPNVSVAVSLSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 121
Db 81 DVRFESIRLPGCPGVNPNVSVAVSLSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 140
Qy 122 SKAPPSPSPSLRPGPSDT 141
Db 141 SKAPPSPSPSLRPGPSDT 160

RESULT 108
AAR15168
ID AAR15168 standard; Protein; 141 AA.
AC AAR15168;
XX
XX
DT 11-FEB-1992 (first entry)
XX
DE HCG deletion mutant, F8.
XX
XX Glycoprotein hormone; immuno-castration;
KW immuno-contragestive; vaccine; human chorionic gonadotropin;
XX Homo sapiens.
XX
XX WO9116922-A.
XX
XX 14-NOV-1991.
XX
XX 07-MAY-1991; 91MO-US03162.
XX
XX 08-MAY-1990; 90US-0320703.
XX
XX (UYNE-) UNIV MED NEW JERSEY.
XX
XX Campbell RK, Moyle WR;
XX
XX WPI; 1991-353528/48.
XX
XX New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX
XX Table VII; Page 66; 94pp; English.
XX
XX The sequence is an analogue of mature hCG beta subunit having
CC residues 42-50 deleted and replaced with alanine to
CC proline. When combined with the alpha subunit, the resultant has
CC been shown to bind LH receptors and stimulate hCG induced cyclic AMP
CC accumulation at ca. 50% the efficacy of hCG. This reduces the
CC steroidogenic potency of the analogue. It may be useful as an agonist
CC for suppression of gonadal activity during chemotherapy.
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX
XX Sequence 141 AA:
SQ
Query Match 94.2%; Score 732; DB 12; Length 141;
Best Local Similarity 96.4%; Pred. No. 4.8e-59;
Matches 135; Conservative 0; Mismatches 1; Indels 4; Gaps 1;
Qy 2 SKEPLPRCPRIATLAVEKGCPCVITVTTTICAGYCTMTNRLQGLALPQVVCNRYR 61
Db 1 SKEPLPRCPRIATLAVEKGCPCVITVTTTICAGYCTMTNRLQGLALPQVVCNRYR 56
Qy 62 DVRFESIRLPGCPGVNPNVSVAVSLSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 121
Db 57 DVRFESIRLPGCPGVNPNVSVAVSLSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 116
Qy 122 SKAPPSPSPSLRPGPSDT 141
Db 117 SKAPPSPSPSLRPGPSDT 136
```

```
|||||
Db 21 SKEPLPRCPRIATLAVEKGCPCVITVTTTICAGYCTMTNRLQGLALPQVVCNRYR 80
Qy 62 DVRFESIRLPGCPGVNPNVSVAVSLSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 121
Db 81 DVRFESIRLPGCPGVNPNVSVAVSLSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 140
Qy 122 SKAPPSPSPSLRPGPSDT 141
Db 141 SKAPPSPSPSLRPGPSDT 160

RESULT 109
AAR15125
ID AAR15125 standard; Protein; 145 AA.
AC AAR15125;
XX
XX 11-FEB-1992 (first entry)
XX
XX hCG/hLH chimera, A10.
XX
XX Glycoprotein hormone; immuno-castration;
KW immuno-contragestive; vaccine; human chorionic gonadotropin;
KW luteinising hormone; LH; CG.
XX
XX Homo sapiens.
XX
XX WO9116922-A.
XX
XX 14-NOV-1991.
XX
XX 07-MAY-1991; 91MO-US03162.
XX
XX 08-MAY-1990; 90US-0520703.
XX
XX (UYNE-) UNIV MED NEW JERSEY.
XX
XX Campbell RK, Moyle WR;
XX
XX WPI; 1991-353528/48.
XX
XX New glyco-protein hormone analogues - for inducing fertility as
PT immuno-castration agents, for suppressing reproductive system
PT development and as immuno-contragestive vaccines.
XX
XX Table VI; Page 65; 94pp; English.
XX
XX The sequence is an analogue of mature hCG beta subunit having
CC residues 42-47, 51, 80, 91, 92 and 99 deleted and the
CC corresponding residues in the human LH protein. The chimeric
CC hormone may be useful in the treatment of infertility in men and
CC women and the promotion of fertility in male and female animals.
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.
XX
XX Sequence 145 AA:
SQ
Query Match 94.2%; Score 732; DB 12; Length 145;
Best Local Similarity 95.0%; Pred. No. 4.9e-59;
Matches 133; Conservative 1; Mismatches 6; Indels 0; Gaps 0;
Qy 2 SKEPLPRCPRIATLAVEKGCPCVITVTTTICAGYCTMTNRLQGLALPQVVCNRYR 61
Db 1 SKEPLPRCPRIATLAVEKGCPCVITVTTTICAGYCTMTNRLQGLALPQVVCNRYR 60
Qy 62 DVRFESIRLPGCPGVNPNVSVAVSLSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 121
Db 61 DVRFESIRLPGCPGVNPNVSVAVSLSCQALCRSTTDCGGPKDHPILTCDDPRFQDSSS 120
Qy 122 SKAPPSPSPSLRPGPSDT 141
Db 121 SKAPPSPSPSLRPGPSDT 140

RESULT 110
AAR15092
ID AAR15092 standard; Protein; 145 AA.
AC AAR15092;
XX
XX 11-FEB-1992 (first entry)
XX
XX hCG/NTSH chimera, C5.
```

XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW thyroid stimulating hormone; TSH; CG;  
 XX Homo sapiens.  
 XX WO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table III; Page 62; 94pp; English.  
 CC The sequence is an analogue of mature hCG beta subunit having  
 CC residues 74, 75, 77, 79, 80 and 83 replaced by the corresponding  
 CC residues in the hTSH protein. The chimeric hormone may be useful  
 CC as a TSH antagonist for the treatment of hyperthyroidism.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX SQ Sequence 145 AA;  
 Query Match 94.28; Score 732; DB 12; Length 145;  
 Best Local Similarity 93.74; Pred. No. 4.9e-59;  
 Matches 134; Conservative 0; Mismatches 6; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPMTTRVQLGVLPAQVVCNTR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPMTTRVQLGVLPAQVVCNTR 60  
 QY 62 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGPKDHLPTCDPRFQDSSS 121  
 DB 61 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGPKDHLPTCDPRFQDSSS 120  
 QY 122 SKAPPSLPSPSRPQSDT 141  
 DB 121 SKAPPSLPSPSRPQSDT 140  
 RESULT 111  
 AAR15164  
 ID AAR15164 standard; Protein: 133 AA;  
 XX AAR15164;  
 XX 11-FEB-1992 (first entry)  
 XX hCG deletion mutant, F4.  
 XX Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 XX Homo sapiens.  
 XX WO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.

PR 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table VII; Page 66; 94pp; English.  
 CC The sequence is an analogue of mature hCG beta subunit having  
 CC residues 134-145 deleted. It was prep. using PCR mutagenesis to  
 CC insert a stop codon into the gene. It may be useful as an agonist  
 CC for suppression of chorionic gonadotropin during chemotherapy.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX SQ Sequence 133 AA;  
 Query Match 94.18; Score 731; DB 12; Length 133;  
 Best Local Similarity 100.08; Pred. No. 5.6e-59;  
 Matches 133; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPMTTRVQLGVLPAQVVCNTR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPMTTRVQLGVLPAQVVCNTR 60  
 QY 62 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGPKDHLPTCDPRFQDSSS 121  
 DB 61 DYRFESIRLPGCPGVNVPVSYVALSCQALCRSTTDCGPKDHLPTCDPRFQDSSS 120  
 QY 122 SKAPPSLPSPSR 134  
 DB 121 SKAPPSLPSPSR 133  
 RESULT 112  
 AAR15121  
 ID AAR15121 standard; Protein: 145 AA.  
 XX AAR15121;  
 XX 11-FEB-1992 (first entry)  
 XX hCG/hLH chimera, A6.  
 XX Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW luteinizing hormone; LH; CG.  
 XX Homo sapiens.  
 XX WO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX

PS Table VI; Page 65; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having

CC residues 2, 8, 10, 15, 42, 47 and 51 replaced by the corresponding

CC residues in the human LH protein. The chimeric hormone may be

CC used in the treatment of infertility in men and women and the

CC promotion of fertility in male and female animals.

CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.

XX

XX Sequence 145 AA:

Query Match 94.1%; Score 731; DB 12; Length 145;

Best Local Similarity 95.0%; Pred. No. 6.1e-59;

Matches 133; Conservative 1; Mismatches 6; Indels 0; Gaps 0;

QY 2 SKEDLPGRCPINATLAVKKEGCPVCTVNTTCAGTCPTNTRVLQGVLPALPQVNCNR 61

DB 1 SREPLRPNCPIINATLAVKKEGCPVCTVNTTCAGTCPTNTRVLQGVLPALPQVNCNR 60

QY 62 DVRFESIRLPGCGPGVNPVVSVALSCQALCRSTTDCGPKDHPKLTCDPRFQDSSS 121

DB 61 DVRFESIRLPGCGPGVNPVVSVALSCQALCRSTTDCGPKDHPKLTCDPRFQDSSS 120

QY 122 SKAPPPSLPSRLPGPSDT 141

DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 113

AARI5099

ID AARI5099 standard; Protein; 145 AA.

AC AARI5099;

DT 11-FEB-1992 (first entry)

XX hCG/bLH chimera, D3.

XX Glycoprotein hormone; immuno-castration;

KW immuno-contragestive; vaccine; human chorionic gonadotropin;

KW luteinising hormone; LH; CG; bovine.

XX Homo sapiens.

OS Bos taurus.

XX W09116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.

XX 08-MAY-1990; 90US-0520703.

XX (UTNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI; 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as

XX immuno-contraction agents, for suppressing reproductive system

XX development and as immuno-contragestive vaccines.

XX Table IV; Page 63; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having

CC residues 40, 42, 46-48, 51, 52, and 55 replaced by the corresponding

CC residues in the bovine LH protein. The chimeric hormone may be

CC useful for identifying residues which are important for binding to

CC the human receptor and may also have applications as an immunogen,

CC agonist and/or antagonist.

CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.

XX

SO Sequence 145 AA;

Query Match 94.0%; Score 730; DB 12; Length 145;

Best Local Similarity 94.3%; Pred. No. 7.5e-59;

Matches 132; Conservative 3; Mismatches 5; Indels 0; Gaps 0;

QY 2 SKEDLPGRCPINATLAVKKEGCPVCTVNTTCAGTCPTNTRVLQGVLPALPQVNCNR 61

DB 1 SREPLRPNCPIINATLAVKKEGCPVCTVNTTCAGTCPTNTRVLQGVLPALPQVNCNR 60

QY 62 DVRFESIRLPGCGPGVNPVVSVALSCQALCRSTTDCGPKDHPKLTCDPRFQDSSS 121

DB 61 DVRFESIRLPGCGPGVNPVVSVALSCQALCRSTTDCGPKDHPKLTCDPRFQDSSS 120

QY 122 SKAPPPSLPSRLPGPSDT 141

DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 114

AAM27680

ID AAM27680 standard; Protein; 145 AA.

AC AAM27680;

DT 12-JAN-1998 (first entry)

XX Chorionic gonadotropin beta subunit amino-terminal loop mutant.

XX Human; chorionic gonadotropin; chorionic gonadotropin; beta-hCG;

KW beta subunit; amino-terminal loop; mutant; reduction; LH; vaccine;

KW contragestative medicament; cross-reactivity; luteinising hormone;

KW contraceptive; immunoassay; Kaposi sarcoma; inhibition;

XX neutralising antibody.

XX Homo sapiens.

OS Synthetic.

XX Key Location/Qualifiers

XX Misc-difference 20 /note= "wild type Lys replaced with Asn"

ET Misc-difference 21 /note= "wild type Glu replaced with Arg"

ET Misc-difference 22 /note= "wild type Gly replaced with Glu"

ET Misc-difference 24 /note= "wild type Pro replaced with His"

ET Misc-difference 25 /note= "wild type Val replaced with Tyr"

XX W09704098-A2.

XX 06-FEB-1997.

XX 19-JUL-1996; 96WO-GB01717.

XX 19-JUL-1995; 95GB-0014816.

XX (DELV/) DELVES P J.

XX (ROIT/) ROITT I M.

XX Delves PJ, Lund T, Roitt IM;

XX WPI; 1997-132639/12.

XX Modified beta-human chorionic gonadotropin proteins - useful as

XX contragestative vaccine

XX Example; Page 2; 23pp; English.

XX The present sequence is the human chorionic gonadotropin beta

XX subunit (beta-hCG), amino-terminal loop mutant Lys20Asn, Glu21Arg,

XX Gly22Glu, Val25Tyr, which can be used in the preparation

XX

CC of a contraceptive medicament. The modified beta-hCG has reduced  
 CC cross-reactivity with luteinising hormone (LH), as defined by the  
 CC ability of both proteins to react with the same antibody. The  
 CC modified beta-hCG can be used as a contraceptive in females. In a  
 CC species, the hCG specific immunoassay and for applications where  
 CC hCG is used as a component of a contraceptive, the modified  
 CC beta-hCG can provide neutralising antibodies to beta-hCG, which do  
 CC not cross-react with other natural hormones.  
 CC N.B. Sequence not given in the specification, but constructed using  
 CC the wild type beta-hCG sequence given in nature 307 959460, 37-40  
 CC (1984).  
 XX  
 SQ Sequence 145 AA;

Query Match 94.0%; Score 730; DB 18; Length 145;  
 Best Local Similarity 95.7%; Pred. No. 7.5e-59;  
 Matches 134; Conservative 0; Mismatches 6; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCPINATLAVKEGCPVITVTTCAGYCTMTVRVLOGVLPALPOVYCNVR 61  
 DB 1 SKEPLRPRCPINATLAVENRECHYCTVTTCAGYCTMTVRVLOGVLPALPOVYCNVR 60  
 OY 62 DVRFESIRLPQCPGVNPNVSVAVALSQCACLRSTTDCGPKDPLTCDPRFQDSSS 121  
 DB 61 DVRFESIRLPQCPGVNPNVSVAVALSQCACLRSTTDCGPKDPLTCDPRFQDSSS 120  
 OY 122 SKAPPSLPSPRLPGPSDT 141  
 DB 121 SKAPPSLPSPRLPGPSDT 140

RESULT 115  
 AARI15165  
 ID AARI15165 standard; Protein: 137 AA.  
 AC AARI15165;  
 DT 11-FEB-1992 (first entry)  
 DE hCG deletion mutant, P5.  
 KW Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 OS Homo sapiens.  
 OS W09116922-A.  
 PD 14-NOV-1991.  
 PF 07-MAY-1991; 91WO-US03162.  
 PR 08-MAY-1990; 90US-0520703.  
 PA (UTNE-) UNIV MED NEW JERSEY.  
 PI Campbell RK, Moyle WR;  
 PS WPI; 1991-353528/48.  
 PT New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-contraction agents for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 PS Table VII; Page 66; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 1-7 deleted. It may be useful as an agonist  
 CC for suppression of gonadal activity during chemotherapy.  
 CC See AARI15043, AARI15061-R15125 and AARI15161-R15198.  
 XX  
 SQ Sequence 137 AA;

Query Match 93.7%; Score 728; DB 12; Length 137;  
 Best Local Similarity 100.0%; Pred. No. 1.1e-58;  
 Matches 132; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 OY 9 RCRPNATLAVKEGCPVITVTTCAGYCTMTVRVLOGVLPALPOVYCNVRDVFESI 68  
 DB 1 RCRPNATLAVKEGCPVITVTTCAGYCTMTVRVLOGVLPALPOVYCNVRDVFESI 60  
 OY 69 RLPGCPGVNPNVSVAVALSQCACLRSTTDCGPKDPLTCDPRFQDSSSSKAPPS 128  
 DB 61 RLPGCPGVNPNVSVAVALSQCACLRSTTDCGPKDPLTCDPRFQDSSSSKAPPS 120  
 OY 129 LPSPSRLPGPSD 140  
 DB 121 LPSPSRLPGPSD 132

RESULT 116  
 AARI15111  
 ID AARI15111 standard; Protein: 145 AA.  
 AC AARI15111;  
 DT 11-FEB-1992 (first entry)  
 DE hCG/eLH chimera, E3.  
 KW Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW luteinising hormone; LH; CG; equine; horse.  
 OS Homo sapiens.  
 OS Equus caballus.  
 PN W09116922-A.  
 PD 14-NOV-1991.  
 PF 07-MAY-1991; 91WO-US03162.  
 PR 08-MAY-1990; 90US-0520703.  
 PA (UTNE-) UNIV MED NEW JERSEY.  
 PI Campbell RK, Moyle WR;  
 PS WPI; 1991-353528/48.  
 PT New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-contraction agents for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 PS Table V; Page 64; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 103-105, 107 and 110 replaced by the corresponding  
 CC residues in the equine LH protein. The chimeric hormone may be  
 CC useful for identifying residues which are important for binding to  
 CC the human receptor and may also have applications as an immunogen,  
 CC agonist and/or antagonist.  
 CC See AARI15043, AARI15061-R15125 and AARI15161-R15198.  
 XX  
 SQ Sequence 145 AA;

Query Match 93.7%; Score 728; DB 12; Length 145;  
 Best Local Similarity 96.4%; Pred. No. 1.1e-58;  
 Matches 135; Conservative 0; Mismatches 5; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCPINATLAVKEGCPVITVTTCAGYCTMTVRVLOGVLPALPOVYCNVR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVITVTTCAGYCTMTVRVLOGVLPALPOVYCNVR 60  
 OY 62 DVRFESIRLPQCPGVNPNVSVAVALSQCACLRSTTDCGPKDPLTCDPRFQDSSS 121

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Db 61 DYRFESIRLPCPRGVNPNVYVAVALSCQALCRSTTDCGVRHQUTADOPRFQDSS 120
QY 122 SKAPPSLPSPRLPGSDT 141
Db 121 SKAPPSLPSPRLPGSDT 140

RESULT 117
AAY43266
ID AAY43266 standard; Protein; 158 AA.
XX
AC AAY43266;
DT 19-JAN-2000 (first entry)
XX
ID Human chorionic gonadotropin beta subunit mutant.
XX
KW Cysteine knot protein; protein formation; heterodimeric protein analog;
KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;
KW polycystic ovarian disease; hCG; human; chorionic gonadotropin; muten;
KW Beta subunit; therapy.
XX
OS Homo sapiens.
OS Synthetic.
XX
XX W09953065-A1.
XX
PD 21-OCT-1999.
XX
PF 13-APR-1999; 99NO-US08018.
XX
PR 14-APR-1998; 98US-0059625.
XX
XX (UYNE-) UNIV NEW JERSEY.
XX
XX Moyle WR;
XX
XX WPI: 1999-620431/53.
XX
XX N-PSDB; AA231734.
XX
XX
PT Methods for producing heterodimers, particularly analogues of hormones,
PT from subunits of cysteine knot proteins.
XX
XX Example 1; Fig 1; 73pp; English.
XX
XX This sequence represents a human chorionic gonadotropin (hCG) beta
XX subunit mutant. The invention relates to a method of forming a cysteine
XX knot protein (1) having alpha and beta subunits comprising attaching a
XX glycosylated amino acid sequence to the N-terminus of both subunits or the
XX N-terminus of one subunit and covalently linking the two subunits by
XX dimerizing the products to form heterodimeric protein analogs (1).
XX The method is used to produce analogues (agonists or antagonists) of
XX deglycosylated glycoprotein hormones, potentially useful, e.g. for
XX treating infertility where caused by polycystic ovarian disease
XX (associated with excessive levels of luteinizing hormone). Products that
XX retain DD's are also useful as immunogens or antigens (since a DD may
XX contain highly antigenic amino acid sequences). Attachment of a DD
XX (which may be removed later) facilitates the formation of heterodimers,
XX that have similar structures (and thus receptor-binding and immunogenic
XX properties) to native dimers, and allows the combination of subunits that
XX would otherwise be incompatible. For example, all the terminal part of a
XX glycoprotein hormone may be modified (by the longer DD) to allow
XX attachment of the DD reduces formation of homodimers. Heterodimers have
XX longer circulation times in vivo than individual subunits.
XX
XX Sequence 158 AA:
XX
XX Query Match 93.7%; Score 728; DB 20; Length 158;
XX Best Local Similarity 100.0%; Pred. No. 1.2e-58;
XX Matches 132; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
XX 10 CRPINATLAVEKCCPCVITNTTICAGTCPTMTRVLQGVLPALQVYCNVDRVFESIR 69

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Db 22 CRPINATLAVEKCCPCVITNTTICAGTCPTMTRVLQGVLPALQVYCNVDRVFESIR 81
QY 70 LPQCPGVNPNVYVAVALSCQALCRSTTDCGVRHQUTADOPRFQDSSSKAPPSL 129
Db 82 LPQCPGVNPNVYVAVALSCQALCRSTTDCGVRHQUTADOPRFQDSSSKAPPSL 141
QY 130 PPSRLPGSDT 141
Db 142 PPSRLPGSDT 153

RESULT 118
AAR15167
ID AAR15167 standard; Protein; 139 AA.
XX
AC AAR15167;
DT 11-FEB-1992 (first entry)
XX
DE hCG deletion mutant, F7.
XX
KW Glycoprotein hormone; immuno-castration;
KW immuno-contraceptive; vaccine; human chorionic gonadotropin;
XX
OS Homo sapiens.
XX
XX W09116922-A.
XX
XX 14-NOV-1991.
XX
PF 07-MAY-1991; 91MO-US03162.
XX
PR 08-MAY-1990; 90US-0520703.
XX
XX (UYNE-) UNIV MED NEW JERSEY.
XX
XX Campbell RK, Moyle WR;
XX
XX WPI: 1991-353528/48.
XX
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-castration agents, for suppressing reproductive system
XX development and as immuno-contraceptive vaccines.
XX
XX Table VII; Page 66; 94pp; English.
XX
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 94-99 deleted. It was prep'd using PCR mutagenesis to
XX insert a stop codon into the gene. It may be useful as an agonist
XX for subunit of hCG activity during chemotherapy.
XX See AAR15041, AAR15061-R15125 and AAR15191-R15198.
XX
XX Sequence 139 AA:
XX
XX Query Match 93.6%; Score 727; DB 12; Length 139;
XX Best Local Similarity 95.7%; Pred. No. 1.3e-58;
XX Matches 134; Conservative 0; Mismatches 0; Indels 6; Gaps 1;
XX
XX 2 SKEPLPRCRPINATLAVEKCCPCVITNTTICAGTCPTMTRVLQGVLPALQVYCNV 61
XX 1 SKEPLPRCRPINATLAVEKCCPCVITNTTICAGTCPTMTRVLQGVLPALQVYCNV 60
Db 62 DYRFESIRLPCPRGVNPNVYVAVALSCQALCRSTTDCGVRHQUTADOPRFQDSS 121
QY 61 DYRFESIRLPCPRGVNPNVYVAVALSCQALCRSTTDCGVRHQUTADOPRFQDSS 114
Db 122 SKAPPSLPSPRLPGSDT 141
XX
XX 115 SKAPPSLPSPRLPGSDT 134

RESULT 119

```

AAR15104  
 ID AAR15104 standard; Protein; 145 AA.  
 AC AAR15104;

DT 11-FEB-1992 (first entry)  
 XX hCG/bLH chimera, D8.

XX Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW luteinising hormone; LH; CG; bovine.  
 XX Homo sapiens.  
 OS Bos taurus.

XX W09116922-A.  
 XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI: 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.

XX Table IV; Page 63; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 105-107, 110 and 113 replaced by the corresponding  
 CC residues in the bovine LH protein. The chimeric hormone may be  
 CC useful for identifying residues which are important for binding to  
 CC the human receptor and may also have applications as an immunogen,  
 CC agonist and/or antagonist.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Query Match 91.43; Score 726; DB 12; Length 145;  
 XX Best Local Similarity 56.43; Pred. No. 1,7e-58;  
 XX Matches 135; Conservative 0; Mismatches 5; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGTCPTMTVRVLOGVLPALPQVYCNVR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGTCPTMTVRVLOGVLPALPQVYCNVR 60  
 QY 62 DVFESIRLPCPGRGVNPVYVAVALSCCALCRSTTDCGGPKDHPKLTCDPRFQSSS 121  
 DB 61 DVFESIRLPCPGRGVNPVYVAVALSCCALCRSTTDCGGPKDHPKLTCDPRFQSSS 120  
 QY 122 SKAPPSLPSPSLPGPSDT 141  
 DB 121 SKAPPSLPSPSLPGPSDT 140

XX RESULT 120  
 XX AAR15074

XX ID AAR15074 standard; Protein; 145 AA.  
 XX AC AAR15074;

XX 11-FEB-1992 (first entry)  
 XX hCG/hFSH chimera, B14.

XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG;  
 XX Homo sapiens.  
 XX W09116922-A.

KW Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG;  
 XX Homo sapiens.  
 XX W09116922-A.  
 XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.

XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI: 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.

XX Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 39, 41-43, 55, 56, and 58 replaced by the corresponding  
 CC residues in the hFSH protein. It was prepd. by site directed  
 CC mutagenesis of a cDNA sequence encoding the hCG beta subunit. The  
 CC chimeric hormone is capable of directing hormone binding to both LH  
 CC and FSH receptors and may be useful for the treatment of infertility  
 CC in men and women and the promotion of fertility in male  
 CC and female animals. (See AAR15043, AAR15061-R15125 and  
 CC AAR15161-R15198).

XX Query Match 93.34; Score 725; DB 12; Length 145;  
 XX Best Local Similarity 95.04; Pred. No. 2.1e-58;  
 XX Matches 133; Conservative 0; Mismatches 7; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGTCPTMTVRVLOGVLPALPQVYCNVR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGTCPTMTVRVLOGVLPALPQVYCNVR 60  
 QY 62 DVFESIRLPCPGRGVNPVYVAVALSCCALCRSTTDCGGPKDHPKLTCDPRFQSSS 121  
 DB 61 DVFESIRLPCPGRGVNPVYVAVALSCCALCRSTTDCGGPKDHPKLTCDPRFQSSS 120  
 QY 122 SKAPPSLPSPSLPGPSDT 141  
 DB 121 SKAPPSLPSPSLPGPSDT 140

XX RESULT 121  
 XX AAR15064

XX ID AAR15064 standard; Protein; 145 AA.  
 XX AC AAR15064;

XX 11-FEB-1992 (first entry)  
 XX hCG/hFSH chimera, B4.

XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG;  
 XX Homo sapiens.  
 XX W09116922-A.

PD 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR.  
 PT Campbell RK, Moyle WR.  
 DR WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX  
 XX Table II; Page 61; 94pp; English.  
 XX  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 45-53 replaced by the corresponding residues of a hCG  
 CC sequence encoding the hCG beta subunit. The chimeric hormone is  
 CC capable of directing hormone binding to both LH and FSH receptors  
 CC and may be useful for the treatment of infertility in men and women  
 CC and the promotion of fertility in male and female animals. (See  
 CC AAR15043, AAR15061-R15125 and AAR15161-R15198).  
 XX  
 XX Sequence 145 AA:  
 SQ  
 Query Match 92.4%; Score 718; DB 12; Length 145;  
 Best Local Similarity 94.4%; Pred. No. 9.2e-58;  
 Matches 134; Conservative 1; Mismatches 3; Indels 4; Gaps 2;  
 OY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTPTVRLQVLPALP--QVNCN 59  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTPTVRLQVLPALP--PARPKIOVNCN 58  
 OY 60 YDVVFESTIRLPGCPRGVNPVSVAVALSQCACLRSTDCGPGKDPHLPDTPDPRFQDS 119  
 DB 59 YDVVFESTIRLPGCPRGVNPVSVAVALSQCACLRSTDCGPGKDPHLPDTPDPRFQDS 118  
 OY 120 SSSKAPPSLPSPRLPGSDT 141  
 DB 119 SSSKAPPSLPSPRLPGSDT 140  
 RESULT 122  
 AAR15122 standard; Protein; 145 AA.  
 XX  
 XX AAR15122;  
 XX  
 XX 11-FEB-1992 (first entry)  
 XX hCG/hLH chimera, A7.  
 XX  
 XX Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW luteinizing hormone; LH; CG.  
 XX Homo sapiens.  
 XX  
 XX W09116922-A.  
 XX  
 XX 14-NOV-1991.  
 XX  
 XX 07-MAY-1991; 91WO-US03162.  
 XX  
 XX 08-MAY-1990; 90US-0520703.  
 XX  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX  
 XX Campbell RK, Moyle WR.

XX WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX  
 XX Table VI; Page 65; 94pp; English.  
 XX  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 45-53 replaced by the corresponding residues of a hCG  
 CC sequence encoding the hCG beta subunit. The chimeric hormone is  
 CC capable of directing hormone binding to both LH and FSH receptors  
 CC and may be useful for the treatment of infertility in men and women  
 CC and the promotion of fertility in male and female animals.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX  
 XX Sequence 145 AA:  
 SQ  
 Query Match 92.4%; Score 718; DB 12; Length 145;  
 Best Local Similarity 92.9%; Pred. No. 9.2e-56;  
 Matches 130; Conservative 3; Mismatches 7; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTPTVRLQVLPALPQVVCN 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTPTVRLQVLPALPQVVCN 60  
 OY 62 YDVVFESTIRLPGCPRGVNPVSVAVALSQCACLRSTDCGPGKDPHLPDTPDPRFQDS 121  
 DB 61 YDVVFESTIRLPGCPRGVNPVSVAVALSQCACLRSTDCGPGKDPHLPDTPDPRFQDS 120  
 OY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140  
 RESULT 123  
 AAR15067  
 ID AAR15067 standard; Protein; 145 AA.  
 XX  
 XX AAR15067;  
 XX  
 XX 11-FEB-1992 (first entry)  
 XX hCG/hFSH chimera, B7.  
 XX  
 XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG.  
 XX Homo sapiens.  
 XX  
 XX W09116922-A.  
 XX  
 XX 14-NOV-1991.  
 XX  
 XX 07-MAY-1991; 91WO-US03162.  
 XX  
 XX 08-MAY-1990; 90US-0520703.  
 XX  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX  
 XX Campbell RK, Moyle WR.  
 XX  
 XX WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX  
 XX Table II; Page 61; 94pp; English.  
 XX  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 73-81, and 83 replaced by the corresponding



CC residues in the hTSH protein. It was prep'd. by site directed mutagenesis of a cDNA sequence encoding the hCG beta subunit. The chimeric hormone is capable of directing hormone binding to hCG receptors and may be useful for the treatment of infertility in men and women and for the promotion of fertility in male and female animals. (See AAR15043, AAR15061-R15125 and AAR15161-R15198).

XX  
SQ Sequence 145 AA;

Query Match 92.1%; Score 716; DB 12; Length 145;  
Best Local Similarity 92.1%; Pred. No. 1.4e-57;  
Matches 130; Conservative 3; Mismatches 7; Indels 0; Gaps 0;

OY 2 SKPELRPCRPINATLAVEKGGPCVITVNTTICAGYCPPTTRVLRQGLVLPALPOVYCNWR 61  
DB 1 SKPELRPCRPINATLAVEKGGPCVITVNTTICAGYCPPTTRVLRQGLVLPALPOVYCNWR 60

OY 62 DVRFESIRLPGCGPGVNVVSYAVALSQCACLRSTTDCGPKDHPDLCDDPRFQSSS 121  
DB 61 DVRFESIRLPGCAHADSLYTPVALSQCACLRSTTDCGPKDHPDLCDDPRFQSSS 120

OY 122 SKAPPSLPSPSLRPGSDT 141  
DB 121 SKAPPSLPSPSLRPGSDT 140

RESULT 124  
AAR15093  
ID AAR15093 standard; Protein; 144 AA.  
XX  
AC AAR15093;  
XX  
DT 11-FEB-1992 (first entry)  
XX  
DE hCG/hTSH chimera, C6.  
XX  
KW Glycoprotein hormone; fertility; immuno-castration;  
KW immuno-castration; vaccine; human chorionic gonadotropin;  
KW thyroid stimulating hormone; TSH; CG;  
XX  
OS Homo sapiens.  
XX  
PN W09116922-A.  
XX  
PD 14-NOV-1991.  
XX  
PF 07-MAY-1991; 91WO-0503162.  
XX  
PR 08-MAY-1990; 90US-0520703.  
XX  
PA (UYNE-) UNIV MED NEW JERSEY.  
XX  
PI Campbell RK, Moyle WR;  
XX  
DR WPI; 1991-353528/48.  
XX  
PD 14-NOV-1991.  
XX  
PF 07-MAY-1991; 91WO-0503162.  
XX  
PR 08-MAY-1990; 90US-0520703.  
XX  
PA (UYNE-) UNIV MED NEW JERSEY.  
XX  
PI Campbell RK, Moyle WR;  
XX  
DR WPI; 1991-353528/48.  
XX  
PT New glyco-protein hormone analogues - for inducing fertility as immuno-castration agents, for suppressing reproductive system development and as immuno-contragestive vaccines.  
XX  
PS Table III; Page 62; 94pp; English.  
XX  
CC The sequence is an analogue of mature hCG beta subunit having residues 89, 91, 92, and 95-99 replaced by the corresponding residues in the hTSH protein and residue 94 deleted. The chimeric hormone may be useful as a TSH antagonist for the treatment of hyperthyroidism.  
XX  
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
XX  
SQ Sequence 144 AA;

Query Match 92.0%; Score 714.5; DB 12; Length 144;

Best Local Similarity 93.7%; Pred. No. 1.9e-57;  
Matches 133; Conservative 1; Mismatches 3; Indels 5; Gaps 2;

OY 2 SKPELRPCRPINATLAVEKGGPCVITVNTTICAGYCPPTTRVLRQGLVLPALPOVYCNWR 61  
DB 1 SKPELRPCRPINATLAVEKGGPCVITVNTTICAGYCPPTTRVLRQGLVLPALPOVYCNWR 60

OY 62 DVRFESIRLPGCGPGVNVVSYAVALSQCACLRSTTDCGPKDHPDLCDDPRFQSSS 119  
DB 61 DVRFESIRLPGCGPGVNVVSYAVALSQCACLRSTTDCGPKDHPDLCDDPRFQSSS 117

OY 120 SSKAPPSLPSPSLRPGSDT 141  
DB 118 SSKAPPSLPSPSLRPGSDT 139

RESULT 125  
AAR15124  
ID AAR15124 standard; Protein; 145 AA.  
XX  
AC AAR15124;  
XX  
DT 11-FEB-1992 (first entry)  
XX  
DE hCG/hH chimera, A9.  
XX  
KW Glycoprotein hormone; immuno-castration;  
KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
KW luteinizing hormone; LH; CG;  
XX  
OS Homo sapiens.  
XX  
PN W09116922-A.  
XX  
PD 14-NOV-1991.  
XX  
PF 07-MAY-1991; 91WO-0503162.  
XX  
PR 08-MAY-1990; 90US-0520703.  
XX  
PA (UYNE-) UNIV MED NEW JERSEY.  
XX  
PI Campbell RK, Moyle WR;  
XX  
DR WPI; 1991-353528/48.  
XX  
PT New glyco-protein hormone analogues - for inducing fertility as immuno-castration agents, for suppressing reproductive system development and as immuno-contragestive vaccines.  
XX  
PS Table VI; Page 65; 94pp; English.  
XX  
CC The sequence is an analogue of mature hCG beta subunit having residues 2, 8, 10, 15, 77, 82, 83, 91, 92 and 99 replaced by the corresponding residues in the human LH protein. The chimeric hormone may be useful in the treatment of infertility in men and women and the promotion of fertility in male and female animals.  
XX  
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
XX  
SQ Sequence 145 AA;

Query Match 91.8%; Score 713; DB 12; Length 145;  
Best Local Similarity 92.1%; Pred. No. 2.6e-57;  
Matches 129; Conservative 4; Mismatches 7; Indels 0; Gaps 0;

OY 2 SKPELRPCRPINATLAVEKGGPCVITVNTTICAGYCPPTTRVLRQGLVLPALPOVYCNWR 61  
DB 1 SREPLRPMCHPINALAVEKGGPCVITVNTTICAGYCPPTTRVLRQGLVLPALPOVYCNWR 60

OY 62 DVRFESIRLPGCGPGVNVVSYAVALSQCACLRSTTDCGPKDHPDLCDDPRFQSSS 121  
DB 61 DVRFESIRLPGCGPGVNVVSYAVALSQCACLRSTTDCGPKDHPDLCDDPRFQSSS 120

OY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140

## RESULT 126

AAR15080  
 ID AAR15080 standard; Protein: 145 AA.

XX AC AAR15080;

XX DT 11-FEB-1992 (first entry)

XX DE HCG/hFSH chimera, B20.

XX XX Glycoprotein hormone; fertility; immuno-castration;

XX XX immuno-contragative; vaccine; human chorionic gonadotropin;

XX XX follicle stimulating hormone; FSH; CG;

XX OS Homo sapiens.

XX PN W09116922-A.

XX PD 14-NOV-1991.

XX XX 07-MAY-1991; 91WO-US03162.

XX XX 08-MAY-1990; 90US-0520703.

XX XX (UYNE-) UNIV MED NEW JERSEY.

XX XX Campbell RK, Moyle WR;

XX XX WPI; 1991-353528/48.

XX XX New glyco-protein hormone analogues - for inducing fertility as

XX XX immuno-castration agents, for suppressing reproductive system

XX XX development and as immuno-contragative vaccines.

XX PS Table II; Page 61; 94pp; English.

XX CC The sequence is an analogue of mature HCG beta subunit having  
 residues 102-107, 109 and 110 replaced by the corresponding residues  
 in the hFSH protein. The chimeric hormone is capable of  
 directing hormone binding to both LH and FSH receptors and may be  
 useful for the treatment of infertility in men and women and the  
 promotion of fertility in male and female animals. (See AAR15043,  
 AAR15061-R15125 and AAR15161-R15198).

XX SQ Sequence 145 AA:

Query Match 91.1%; Score 708; DB 12; Length 145;  
 Best Local Similarity 94.3%; Pred. No. 7, 4e-57;  
 Matches 132; Conservative 2; Mismatches 6; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCTMTVRVGLVLPALPQVNCYR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCTMTVRVGLVLPALPQVNCYR 60  
 OY 62 DVRFESIRLPCRCGVNPNVSYAVALSOCALCRSTTDCGPKDPLTCDDPRQDSSS 121  
 DB 61 DVRFESIRLPCRCGVNPNVSYAVALSOCALCRSTTDCGPKDPLTCDDPRQDSSS 120  
 OY 122 SKAPPSLPSPRLPGSDT 141  
 DB 121 SKAPPSLPSPRLPGSDT 140

## RESULT 127

AAY43300  
 ID AAY43300 standard; Protein: 209 AA.

XX XX AAY43300;

XX DT 19-JAN-2000 (first entry)

XX DE HLA/HCG beta subunit-Jun fusion protein sequence.

XX XX Cysteine knot protein; protein formation; heterodimeric protein analog;

XX XX designed to elicit an immune response to fertility; immunogen antigen;

XX XX Polycystic ovarian disease; HCG; human; chorionic gonadotropin;

XX XX beta subunit; therapy; Jun.

XX OS Homo sapiens.

XX PN W09933065-A1.

XX XX 21-OCT-1999.

XX XX 13-APR-1999; 99WO-US08018.

XX XX 14-APR-1998; 98US-0059625.

XX PA (UYNE-) UNIV NEW JERSEY.

XX PI Moyle WR;

XX XX WPI; 1999-620431/53.

XX XX Methods for producing heterodimers, particularly analogues of hormones,

XX XX from subunits of cysteine knot proteins -

XX XX Example 7; Fig 20; 73pp; English.

XX CC This sequence is a fusion protein of HLA/HCG and Jun. The invention  
 relates to a method of forming a cysteine knot protein (1) having alpha  
 and beta subunits comprising attaching a dimerisation domain (DD) to  
 either the N-termini of both subunits or the C-termini of the  
 alpha subunit and to the C-termini of the beta subunit and the resulting  
 construct used to produce analogues (agonists or antagonists) of deglycosylated  
 glycoprotein hormones, potentially useful, e.g. for treating infertility  
 where caused by polycystic ovarian disease (associated with excessive  
 levels of luteinising hormone). Products that retain DD's are also useful  
 as immunogens or antigens (since a DD may contain highly antigenic  
 amino acid sequences). Attachment of a DD (which may be removed later)  
 facilitates the formation of heterodimers, that have similar structures  
 (and thus receptor-binding and immunogenic properties) to native dimers,  
 and allows the combination of subunits that would otherwise combine  
 poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 be modified without loss of activity, and attachment of the DD reduces  
 the formation of non-functional heterodimers. Heterodimers have longer circulation times in  
 vivo than individual subunits.

XX SQ Sequence 209 AA:

Query Match 90.5%; Score 703; DB 20; Length 209;  
 Best Local Similarity 90.7%; Pred. No. 3, 1e-56;  
 Matches 127; Conservative 5; Mismatches 8; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCTMTVRVGLVLPALPQVNCYR 61  
 DB 21 SKEPLRPRCPINATLAVEKEGCPVCTVNTTICAGYCTMTVRVGLVLPALPQVNCYR 80  
 OY 62 DVRFESIRLPCRCGVNPNVSYAVALSOCALCRSTTDCGPKDPLTCDDPRQDSSS 121  
 DB 61 DVRFESIRLPCRCGVNPNVSYAVALSOCALCRSTTDCGPKDPLTCDDPRQDSSS 140  
 OY 122 SKAPPSLPSPRLPGSDT 141  
 DB 141 SKAPPSLPSPRLPGSDT 160

## RESULT 128

AAR15061

ID AARI5061 standard; Protein: 139 AA.  
 XX AARI5061;  
 AC 11-FEB-1992 (first entry)  
 DT hCG/HTSH chimera, B1.  
 DE  
 XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG;  
 OS Homo sapiens.  
 XX W09116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 PI WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table II; Page 61; 94pp; English.  
 XX The sequence is an analogue comprising amino acids 7-145 of mature  
 CC hCG beta subunit having residues 7, 8, 10, 11, 12, 14, 16, and 18  
 CC replaced by the corresponding residues in the hFSH protein. It was  
 CC prepared by site directed mutagenesis of a cDNA sequence encoding the  
 CC hCG beta subunit. The chimera has the capacity of directing  
 CC hormone binding to both LH and FSH receptors and is useful for  
 CC the treatment of infertility in men and women and the promotion of  
 CC fertility in male and female animals. (See AARI5043, AARI5062-R15125  
 CC and AARI5161-R15198).  
 XX Sequence 139 AA:  
 Query Match 90.1%; Score 700; DB 12; Length 139;  
 Best Local Similarity 95.5%; Pred. No. 3.8e-56;  
 Matches 146; Conservative 2; Mismatches 4; Indels 0; Gaps 0;  
 QY 10 CRPNATLAVERGCPVCITVNTTICAGTCPTMTVQLQVLPALPVQVYCDVRFESIR 69  
 DB 3 CELTNTITATEREGCPVCITVNTTICAGTCPTMTVQLQVLPALPVQVYCDVRFESIR 62  
 QY 70 LPQCPRGVNVVSYVALSCQCALCRSTTTCGGPKDHPHLCDDPRFQDSSSKAPPSL 129  
 DB 63 LPQCPRGVNVVSYVALSCQCALCRSTTTCGGPKDHPHLCDDPRFQDSSSKAPPSL 122  
 QY 130 PPSRLPQPSDT 141  
 DB 123 PPSRLPQPSDT 134  
 RESULT 129  
 AARI5094  
 ID AARI5094 standard; Protein: 145 AA.  
 XX AARI5094;  
 AC 11-FEB-1992 (first entry)  
 DT hCG/HTSH chimera, C7.  
 DE  
 XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW thyroid stimulating hormone; TSH; CG;  
 OS Homo sapiens.  
 XX W09116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX

KW Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW thyroid stimulating hormone; TSH; CG;  
 OS Homo sapiens.  
 XX W09116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 PI WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table III; Page 62; 94pp; English.  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 102-110 replaced by the corresponding residues in the hFSH  
 CC protein. The chimera may be useful as a FSH antagonist.  
 CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.  
 XX Sequence 145 AA:  
 Query Match 90.0%; Score 699; DB 12; Length 145;  
 Best Local Similarity 93.6%; Pred. No. 4.9e-56;  
 Matches 131; Conservative 1; Mismatches 8; Indels 0; Gaps 0;  
 QY 2 SKEPRLRCRPNATLAVERGCPVCITVNTTICAGTCPTMTVQLQVLPALPVQVYCDVRFESIR 61  
 DB 1 SKEPRLRCRPNATLAVERGCPVCITVNTTICAGTCPTMTVQLQVLPALPVQVYCDVRFESIR 60  
 QY 62 DVFRESIRLPGCPRGVNVVSYVALSCQCALCRSTTTCGGPKDHPHLCDDPRFQDSSS 121  
 DB 61 DVFRESIRLPGCPRGVNVVSYVALSCQCALCRSTTTCGGPKDHPHLCDDPRFQDSSS 120  
 QY 122 SKAPPSPSPSRLPQPSDT 141  
 DB 121 SKAPPSPSPSRLPQPSDT 140  
 RESULT 130  
 AARI5088  
 ID AARI5088 standard; Protein: 138 AA.  
 XX AARI5088;  
 AC 11-FEB-1992 (first entry)  
 DT hCG/HTSH chimera, C1.  
 DE  
 XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW thyroid stimulating hormone; TSH; CG;  
 OS Homo sapiens.  
 XX W09116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX

PR 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX  
 XX Table III; Page 62; 94pp; English.  
 XX  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 1-7 deleted and residues 8, 10, 12-14 and 16-18 replaced by  
 CC the corresponding residues in the hCG protein. The chimeric hormone  
 CC may be useful for inducing fertility as  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX  
 XX Sequence 138 AA;  
 SQ

Query Match 89.3%; Score 694; DB 12; Length 138;  
 Best Local Similarity 94.7%; Pred. No. 1.3e-55;  
 Matches 125; Conservative 2; Mismatches 5; Indels 0; Gaps 0;  
 QY 10 CRIPTATLAVKEGCPVCTVNTTICAGYCPMTVRVLOGVLPALQVWYRDFESIR 69  
 Db 2 CIPTEVTHIEREGCPVCTVNTTICAGYCPMTVRVLOGVLPALQVWYRDFESIR 61  
 QY 70 LFGCPGVNPNVSVYVALSCQALCRSTTDCGGPKDHPHLCDDPRFQDSSSKAPPSL 129  
 Db 62 LFGCPGVNPNVSVYVALSCQALCRSTTDCGGPKDHPHLCDDPRFQDSSSKAPPSL 129  
 QY 130 FSPSLPGPSDT 141  
 Db 122 FSPSLPGPSDT 133

RESULT 131  
 AAR15113  
 ID AAR15113 standard; Protein: 145 AA.  
 XX  
 XX AAR15113;  
 XX  
 XX 11-FEB-1992 (first entry)  
 DE hCG/eLH chimera, E5.  
 XX  
 XX Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW luteinising hormone; LH; CG; equine; horse.  
 XX  
 XX Homo sapiens.  
 OS Equus caballus.  
 XX  
 XX WO9116922-A.  
 PN  
 XX  
 XX 14-NOV-1991.  
 PD  
 XX  
 XX 07-MAY-1991; 91WO-US03162.  
 XX  
 XX 08-MAY-1990; 90US-0520703.  
 XX  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 PA  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.

XX Table V; Page 64; 94pp; English.  
 XX  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 94-96, 103-105, 107, 110 and 112-115 replaced by the  
 CC corresponding residues in the equine LH protein. The chimeric  
 CC hormone may be useful for identifying residues which are important  
 CC for binding to the human receptor and may also have applications as  
 CC agonists, antagonists, and immuno-contragestive vaccines.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX  
 XX Sequence 145 AA;  
 SQ

Query Match 89.3%; Score 694; DB 12; Length 145;  
 Best Local Similarity 92.1%; Pred. No. 1.4e-55;  
 Matches 129; Conservative 2; Mismatches 9; Indels 0; Gaps 0;  
 QY 2 SKEPLRRCRIATLAVKEGCPVCTVNTTICAGYCPMTVRVLOGVLPALQVWYR 61  
 Db 1 SKEPLRRCRIATLAVKEGCPVCTVNTTICAGYCPMTVRVLOGVLPALQVWYR 60  
 QY 62 DYRFESTRLPGCPGVNPNVSVYVALSCQALCRSTTDCGGPKDHPHLCDDPRFQDSS 121  
 Db 61 DYRFESTRLPGCPGVNPNVSVYVALSCQALCRSTTDCGGPKDHPHLCDDPRFQDSS 120  
 QY 122 SKAPPSLPGPSDT 141  
 Db 121 SKAPPSLPGPSDT 140

RESULT 132  
 AAR15084  
 ID AAR15084 standard; Protein: 145 AA.  
 XX  
 XX AAR15084;  
 XX  
 XX 11-FEB-1992 (first entry)  
 DE hCG/hFSH chimera, B24.  
 XX  
 XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG.  
 XX  
 XX Homo sapiens.  
 OS  
 XX WO9116922-A.  
 PN  
 XX  
 XX 14-NOV-1991.  
 PD  
 XX  
 XX 07-MAY-1991; 91WO-US03162.  
 XX  
 XX 08-MAY-1990; 90US-0520703.  
 XX  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 PA  
 XX Campbell RK, Moyle WR;  
 XX WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX  
 XX Table II; Page 61; 94pp; English.  
 XX  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 39, 41-43, and 45-53 replaced by the corresponding residues  
 CC in the hFSH protein. The chimeric hormone is capable of directing  
 CC hormone binding to both LH and FSH receptors and may be useful for the  
 CC treatment of infertility in men and women and the promotion of  
 CC fertility in male and female animals. (See AAR15043, AAR15061-R15125 and  
 CC AAR15161-R15198).

XX SQ Sequence 145 AA:  
 Query Match 88.7%; Score 689; DB 12; Length 145;  
 Best Local Similarity 91.5%; Pred. No. 3.9e-55;  
 Matches 130; Conservative 1; Mismatches 7; Indels 4; Gaps 2;  
 QY 2 SKEPLRPRCPINATLAVKESGCPVCITVNTTICAGYCTPTNRVLQGVLPALP-OYVCH 59  
 DB 1 SKEPLRPRCPINATLAVKESGCPVCITVNTTICAGYCTPTNRVLQGVLPALP-PAREKIQVCH 58  
 QY 60 YRDVFESIRLPGCPRGVNPVSYAVALSQCACLRSTTDCGGPKDHPHLCDDPRFQDS 119  
 DB 59 YRDVFESIRLPGCPRGVNPVSYAVALSQCACLRSTTDCGGPKDHPHLCDDPRFQDS 118  
 QY 120 SSKAPPSPSPSLPSPSOT 141  
 DB 119 SSKAPPSPSPSLPSPSOT 140  
 RESULT 133  
 AAW69449  
 ID AAW69449 standard; peptide; 132 AA.  
 XX AC AAW69449;  
 XX DT 18-DEC-1998 (first entry)  
 XX DE Human chorionic gonadotropin beta subunit.  
 XX KW Antigenic peptide; HCG; human chorionic gonadotropin; vascular disease;  
 KW antigenic modification; immunogenic conjugate; vaccine development;  
 KW anti-pregnancy vaccine; hormone related tumour; endocrine related tumour;  
 KW cancer; hypertension; angiotensin; diabetes; therapy.  
 XX OS Homo sapiens.  
 XX UN US5817753-A.  
 XX PA 06-OCT-1998.  
 XX PF 06-OCT-1992; 92US-0958601.  
 XX PR 07-AUG-1989; 89US-0390530.  
 PR 04-DEC-1985; 85US-0804642.  
 PR 17-AUG-1987; 87US-0086401.  
 PR 06-OCT-1992; 92US-0958601.  
 XX PA (OHIS ) UNIV OHIO STATE. RES FOUND.  
 XX PI Stevens VC;  
 XX WPI: 1998-556460/47.  
 XX Modified human chorionic gonadotropin beta subunit peptide(s) -  
 PT useful for producing immunogenic conjugates with proteins that are  
 PT not normally immunogenic, for use as vaccines  
 XX Disclosure: Column 19; 81pp; English.  
 XX This sequence represents the human chorionic gonadotropin (HCG) beta  
 subunit. The antigenic peptides of this invention are synthetic analogues  
 of the antigenic peptides of the HCG beta subunit. The HCG beta subunit  
 consists of 145 amino acid residues. The antigenic peptides are HCG  
 beta residues 38-57. The invention provides a method for the antigenic  
 modification of peptides. The peptides can then be coupled to carrier  
 proteins, e.g. diphtheria toxoid, to produce immunogenic conjugates that  
 elicit anti-HCG antibodies (but at a lower level than the native peptide)  
 and do not elicit antibodies to human luteinizing hormone. The conjugates  
 can be used for vaccine development or to produce polyclonal antisera for  
 diagnostic assays. Depending on the peptides used, the vaccines can be  
 used to treat hormone and endocrine related tumours, cancers,  
 hypertension (especially using angiotensin related peptides), and  
 diabetes and associated vascular diseases, or as anti-pregnancy vaccines

CC (especially post-conception). The adapted peptides allow production of  
 CC vaccines from endogenous proteins, which are not normally immunogenic.  
 XX SQ Sequence 132 AA:  
 Query Match 88.5%; Score 687.5; DB 19; Length 132;  
 Best Local Similarity 90.7%; Pred. No. 4.9e-55;  
 Matches 127; Conservative 0; Mismatches 6; Indels 13; Gaps 1;  
 QY 2 SKEPLRPRCPINATLAVKESGCPVCITVNTTICAGYCTPTNRVLQGVLPALPQVCH 61  
 DB 1 SKEPLRPRCPINATLAVKESGCPVCITVNTTICAGYCTPTNRVLQGVLPALPQVCH 60  
 QY 62 DYRFESIRLPGCPRGVNPVSYAVALSQCACLRSTTDCGGPKDHPHLCDDPRFQDS 121  
 DB 61 DYRFESIRLPGCPRGVNPVSYAVALSQCACLRSTTDCGGPKDHPHLCDDPRFQDS 107  
 QY 122 SKAPPSPSPSLPSPSOT 141  
 DB 108 SKAPPSPSPSLPSPSOT 127  
 RESULT 134  
 AAR15090  
 ID AAR15090 standard; protein; 147 AA.  
 XX AC AAR15090;  
 XX DT 11-FEB-1992 (first entry)  
 XX DE hCG/hTSH chimera, C3.  
 XX KW Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW thyroid stimulating hormone; TSH; CG;  
 XX OS Homo sapiens.  
 XX UN W09116922-A.  
 XX PA 14-NOV-1991.  
 XX PF 07-MAY-1991; 91WO-US03162.  
 XX PR 08-MAY-1990; 90US-0520703.  
 XX PA (UYNE-) UNIV MED NEW JERSEY.  
 XX PI Campbell RK, Hoyle WR;  
 XX WPI: 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table III; Page 62; 94pp; English.  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 39, 41-50, 53, 55 and 58 replaced by the corresponding  
 CC residues in the hTSH protein and the sequence from hTSH  
 CC inserted in place of the sequence from hCG. The sequence may be useful  
 CC as an FSH antagonist for the treatment of hypothyroidism.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX SQ Sequence 147 AA:  
 Query Match 88.2%; Score 685; DB 12; Length 147;  
 Best Local Similarity 91.0%; Pred. No. 9.2e-55;  
 Matches 131; Conservative 1; Mismatches 6; Indels 6; Gaps 3;  
 QY 2 SKEPLRPRCPINATLAVKESGCPVCITVNTTICAGYCTPTNRVLQGVLPALPQVCH 57  
 DB 1 SKEPLRPRCPINATLAVKESGCPVCITVNTTICAGYCTPTNRVLQGVLPALPQVCH 57

Db 1 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYC--MTROINGKLFLPKYALSQDV 58  
 QY 58 CNYRDFRESIRLPGCGPGVNPVSYAVALSQCACALCRSTTDCGGPKDHLPTCDPRFQ 117  
 Db 59 CNYRDFRESIRLPGCGPGVNPVSYAVALSQCACALCRSTTDCGGPKDHLPTCDPRFQ 118  
 QY 118 DSSSKAPPPSLPSRLPGSDT 141  
 Db 119 DSSSKAPPPSLPSRLPGSDT 142  
 RESULT 135  
 AARI5163  
 ID AARI5163 standard; Protein: 123 AA.  
 AC AARI5163;  
 XN 11-FEB-1992 (first entry)  
 DT 11-FEB-1992 (first entry)  
 DE hCG deletion mutant, F3.  
 XX Glycoprotein hormone; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW Homo sapiens.  
 OS W09116922-A.  
 XN 14-NOV-1991.  
 PD 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (DYNE-) UNIV MED NEW JERSEY.  
 PA Campbell RK, Moyle WR;  
 PI WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table VII; Page 66; 94pp; English.  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 124-145 deleted. It was prepd. using PCR mutagenesis to  
 CC insert a stop codon into the gene. It may be useful as an agonist  
 CC for suppression of gonadal activity during chemotherapy.  
 CC See AARI5043, AARI5061-R15125 and AARI5161-R15198.  
 XX Sequence 123 AA;  
 SQ  
 Query Match 86.9%; Score 675; DB 12; Length 123;  
 Best Local Similarity 100.0%; Pred. NO. 6.2e-54;  
 Matches 123; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPTMTVRLQGLPALPQVNCNR 61  
 Db 1 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPTMTVRLQGLPALPQVNCNR 60  
 QY 62 DVRFESIRLPGCGPGVNPVSYAVALSQCACALCRSTTDCGGPKDHLPTCDPRFQSSS 121  
 Db 61 DVRFESIRLPGCGPGVNPVSYAVALSQCACALCRSTTDCGGPKDHLPTCDPRFQSSS 120  
 QY 122 SKA 124  
 Db 121 SKA 123  
 RESULT 136  
 AAW95935

ID AAW95935 standard; Protein: 165 AA.  
 AC AAW95935;  
 XN 08-JUN-1999 (first entry)  
 DE hCG/hFSH chimeric beta subunit CFC101-114-beta'.  
 XX Analogue: heterodimeric; glycoprotein hormone; hCG; hLR; hFSH; hTSH;  
 KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
 KW human follicle stimulating hormone; human thyroid stimulating hormone;  
 KW stability; primer; amplification; PCR; mutation.  
 XX Homo sapiens.  
 OS Synthetic.  
 XN W09858957-A2.  
 PD 30-DEC-1998.  
 XX 25-JUN-1998; 98WO-US13070.  
 XX 25-JUN-1997; 97US-0050784.  
 XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.  
 PA (MCIN-) MCINNIS P G.  
 XN Moyle WR;  
 WPI; 1999-081219/07.  
 XX New stabilised glycoprotein hormones - particularly hCG, hLR, hFSH  
 PT or hTSH, have an intersubunit disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability  
 XX Disclosure: Fig 10A; 139pp; English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human luteinising hormone (hLH), human follicle stimulating hormone  
 CC (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 CC mutants, which are modified to contain an intersubunit disulphide bond,  
 CC between an alpha-subunit cysteine and a beta-subunit cysteine, for  
 CC improved stability, the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a chimeric hCG/hFSH-beta subunit used for the generation of  
 CC the modified GPHs. The improved analogues are designed specifically  
 CC to reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer will have affinity for the native receptors and have  
 CC agonistic activity like them. The changes stabilise the GPH analogues  
 CC as for the native GPHs. The analogues can have uses  
 XX  
 SQ Sequence 165 AA;  
 Query Match 86.9%; Score 675; DB 20; Length 165;  
 Best Local Similarity 91.4%; Pred. No. 8.4e-54;  
 Matches 128; Conservative 0; Mismatches 12; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPTMTVRLQGLPALPQVNCNR 61  
 Db 21 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPTMTVRLQGLPALPQVNCNR 80  
 QY 62 DVRFESIRLPGCGPGVNPVSYAVALSQCACALCRSTTDCGGPKDHLPTCDPRFQSSS 121  
 Db 81 DVRFESIRLPGCGPGVNPVSYAVALSQCACALCRSTTDCGGPKDHLPTCDPRFQSSS 140  
 QY 122 SKAPPPSLPSRLPGSDT 141  
 Db 141 SKAPPPSLPSRLPGSDT 160

RESULT 137  
 AD AAR15075 standard; Protein: 145 AA.  
 AC AAR15075;  
 DT 11-FEB-1992 (first entry)  
 DE hCG/hFSH chimera, B15.  
 OS Homo sapiens.  
 XX Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG;  
 XX  
 XX Homo sapiens.  
 XX WO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91MO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UTNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 PI WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX  
 XX Table II; Page 61; 94pp; English.  
 CC The sequence is an analogue of mature hCG beta subunit having  
 CC residues 39, 41-43, 45-53, 55, 56, and 58 replaced by the corresponding  
 CC residues in the hFSH protein. It was prepd. by site directed  
 CC mutagenesis of a cDNA sequence encoding the hCG beta subunit. The  
 CC chimeric hormone is capable of directing hormone binding to both LH  
 CC and FSH receptors and may be useful for the treatment of infertility  
 CC in men and women and the promotion of fertility in male  
 CC and female animals. (See AAR15043, AAR15061-R15125 and  
 CC AAR15161-R15198).  
 XX  
 SQ Sequence 145 AA;  
 Query Match 86.7%; Score 674; DB 12; Length 145;  
 Best Local Similarity 88.7%; Pred. No. 9e-54;  
 Matches 126; Conservative 3; Mismatches 9; Indels 4; Gaps 2;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTTCAGYCTPTTRVQLGVLPALPOV--VCN 59  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTTTCAGYCTPTTRVQLGVLPALPOV--VCN 59  
 QY 60 YRDVFESIRLPGCPRGVNPVSYAVALSQCACLRSTTDCGGPKDHLPLTCDPRFQDS 119  
 DB 59 YRDVFESIRLPGCPRGVNPVSYAVALSQCACLRSTTDCGGPKDHLPLTCDPRFQDS 118  
 QY 120 SSSKAPPSLPSPSLRPGSDT 141  
 DB 119 SSSKAPPSLPSPSLRPGSDT 140  
 RESULT 138  
 AAW99539  
 ID AAW99539 standard; Protein: 165 AA.  
 XX AAW99539;  
 XX  
 DT 08-JUN-1999 (first entry)  
 XX

DE hCG/hFSH chimeric beta subunit CFC101-114-beta/p99C.  
 XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
 KW human chorionic gonadotropin; human luteinizing hormone; disulphide bond;  
 KW follicle stimulating hormone; human chorionic gonadotropin; hCG; hLH; hFSH;  
 KW stability; primer; amplification; PCR; mutation.  
 OS Homo sapiens.  
 OS Synthetic.  
 XX WO9859957-A2.  
 XX 30-DEC-1998.  
 XX 25-JUN-1998; 98WO-US13070.  
 XX 25-JUN-1997; 97US-0050784.  
 XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.  
 XX (MCIN-) MCINNIS P G.  
 XX Moyle WR;  
 XX WPI; 1999-081219/07.  
 XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
 PT or hTSH have a heterodimeric disulphide crosslink between the  
 PT alpha- and beta-subunits to improve stability  
 XX  
 PS Disclosure; Fig 21; 139pp; English.  
 XX The invention relates to the production of analogues of a heterodimeric  
 CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
 CC (hCG), human luteinizing hormone (hLH), human follicle stimulating  
 CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
 CC proteins, which are modified to contain at least one heterodimeric crosslink  
 CC between the alpha- and beta-subunits to improve stability for  
 CC improved stability the analogue retaining at least a portion of the  
 CC bioactivity for the corresponding native GPH receptor. This sequence  
 CC represents a mutant chimeric hCG/hFSH-beta subunit used for generating  
 CC the modified GPHs. The improved analogues are designed specifically  
 CC to reduce perturbation of the 3-dimensional structure of the hormone,  
 CC thereby creating greater likelihood that the dimer will be formed in vivo  
 CC and the formed dimer will have affinity for the native receptors and have  
 CC agonistic activity on them. The changes stabilise the GPHs and prolong  
 CC the biological activities of the hormones. The analogues can have uses  
 CC as for the native GPHs.  
 XX  
 SQ Sequence 165 AA;  
 Query Match 86.4%; Score 671; DB 20; Length 165;  
 Best Local Similarity 90.7%; Pred. No. 1.9e-53;  
 Matches 127; Conservative 1; Mismatches 12; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTTTCAGYCTPTTRVQLGVLPALPOVVCNTR 61  
 DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTTTCAGYCTPTTRVQLGVLPALPOVVCNTR 80  
 QY 62 YRDVFESIRLPGCPRGVNPVSYAVALSQCACLRSTTDCGGPKDHLPLTCDPRFQDS 121  
 DB 81 YRDVFESIRLPGCPRGVNPVSYAVALSQCACLRSTTDCGGPKDHLPLTCDPRFQDS 140  
 QY 122 SKAPPSLPSPSLRPGSDT 141  
 DB 141 SKAPPSLPSPSLRPGSDT 160  
 RESULT 139  
 AAR15166  
 ID AAR15166 standard; Protein: 128 AA.  
 XX AAR15166;  
 AC AAR15166;  
 XX

DT 11-FEB-1992 (first entry)  
XX hCG deletion mutant, F6.  
DE Glycoprotein hormone; immuno-castration;  
KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
XX Homo sapiens.  
OS  
XX W09116922-A.  
XX  
XX 14-NOV-1991.  
XX  
XX 07-MAY-1991; 91WO-US03162.  
XX  
XX 08-MAY-1990; 90US-0520703.  
XX  
XX (UYNE-) UNIV MED NEW JERSEY.  
XX  
XX Campbell RK, Moyle WR;  
PI  
XX WPI: 1991-353528/48.  
XX  
XX New glyco-protein hormone analogues - for inducing fertility as  
PT immuno-castration agents, for suppressing reproductive system  
PT development and as immuno-contragestive vaccines.  
XX  
XX Table VII; Page 66; 94pp; English.  
XX  
XX The sequence is an analogue of mature hCG beta subunit having  
CC residues 39-55 deleted. It was prep. using PCR mutagenesis to  
CC insert a stop codon into the gene. It may be useful as an agonist  
CC for suppression of gonadal activity during chemotherapy.  
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
XX  
SQ Sequence 128 AA;  
Query Match 85.81; Score 666.5; DB 12; Length 128;  
Best Local Similarity 87.91; Pred. No. 3.8e-53;  
Matches 123; Conservative 0; Mismatches 0; Indels 17; Gaps 1;  
QY 2 SKEPLRPRCPINATLAVEREGCPVCTVNTTICAGYCPMTVRVLOGVLPALPOVVCNVR 61  
DB 1 SKEPLRPRCPINATLAVEREGCPVCTVNTTICAGYCPMTVRVLOGVLPALPOVVCNVR 43  
QY 62 DVRFESIRLPCGPGVNPVSVYVALSCQCALCRSTTDCGPKDHPITCDPFRQDSSS 121  
DB 44 DVRFESIRLPCGPGVNPVSVYVALSCQCALCRSTTDCGPKDHPITCDPFRQDSSS 103  
QY 122 SKAPPSLPSPSLRPGSDT 141  
DB 104 SKAPPSLPSPSLRPGSDT 123  
RESULT 140  
AAR99536  
ID AAR99536 standard; Protein: 165 AA.  
XX  
XX AAR99536;  
XX  
XX 08-JUN-1999 (first entry)  
XX  
XX hCG/hFSH chimeric beta subunit CFC101-114-betaY37C.  
XX  
XX Analogue: heterodimeric; glycoprotein hormone; hCG; hH; hFSH; hTSH;  
KW human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
KW human follicle stimulating hormone; human thyroid stimulating hormone;  
KW stability; primer; amplification; PCR; mutation.  
XX  
XX Homo sapiens.  
OS  
XX Synthetic.  
XX  
XX W09858957-A2.  
XX

XX 30-DEC-1998.  
XX  
XX 25-JUN-1998; 98WO-US13070.  
XX  
XX 25-JUN-1997; 97US-0050784.  
XX  
XX (ISTF ) ABS APPLIED RES SYSTEMS HOLDING NV.  
XX (ACIN-) MCINNIS P G.  
XX  
XX Moyle WR;  
XX  
XX WPI: 1999-081219/07.  
XX  
XX New stabilised glycoprotein hormones - particularly hCG, hH, hFSH  
PT or hTSH, have an intersubunit disulphide crosslink between the  
PT alpha- and beta-subunits to improve stability  
XX  
XX Disclosure: Fig 108; 139pp; English.  
XX  
XX The invention relates to the production of analogues of a heterodimeric  
CC subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
CC (hCG), human luteinising hormone (hLH), human follicle stimulating  
CC hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
CC muteins, which are modified to contain an intersubunit disulphide bond,  
CC between an alpha-subunit cysteine and a beta-subunit cysteine, for  
CC improved stability, the analogue retaining at least a portion of the  
CC biological activity of the native hormone. The analogues are designed to  
CC represent a mutant chimeric hCG/hFSH-beta subunit used for generating  
CC the modified GPHs. The improved analogues are designed specifically  
CC to reduce perturbation of the 3-dimensional structure of the hormone,  
CC thereby creating greater likelihood that the dimer will be formed in vivo  
CC and the formed dimer will have affinity for the native receptors and have  
CC agonistic activity on them. The changes stabilise the GPHs and prolong  
CC the biological activities of the hormones. The analogues can have uses  
CC as for the native GPHs.  
XX  
XX Sequence 165 AA;  
Query Match 85.74; Score 666; DB 20; Length 165;  
Best Local Similarity 90.74; Pred. No. 5.5e-53;  
Matches 127; Conservative 0; Mismatches 13; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVEREGCPVCTVNTTICAGYCPMTVRVLOGVLPALPOVVCNVR 61  
DB 21 SKEPLRPRCPINATLAVEREGCPVCTVNTTICAGYCPMTVRVLOGVLPALPOVVCNVR 80  
QY 62 DVRFESIRLPCGPGVNPVSVYVALSCQCALCRSTTDCGPKDHPITCDPFRQDSSS 121  
DB 81 DVRFESIRLPCGPGVNPVSVYVALSCQCALCRSTTDCGPKDHPITCDPFRQDSSS 140  
QY 122 SKAPPSLPSPSLRPGSDT 141  
DB 141 SKAPPSLPSPSLRPGSDT 160  
RESULT 141  
AAR15072  
ID AAR15072 standard; Protein: 145 AA.  
XX  
XX AAR15072;  
XX  
XX 11-FEB-1992 (first entry)  
XX  
XX hCG/hFSH chimera, B12.  
XX  
XX Glycoprotein hormone; fertility; immuno-castration;  
KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
KW follicle stimulating hormone; FSH; CG;  
XX  
XX Homo sapiens.  
OS  
XX W09116922-A.  
XX



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XX 14-NOV-1991.
XX 07-MAY-1991; 91WO-US03162.
XX 08-MAY-1990; 90US-0520703.
XX (DYNE-) UNIV MED NEW JERSEY.
XX Campbell RK, Moyle WR;
XX WPI; 1991-35328/48.
XX New glyco-protein hormone analogues - for inducing fertility as
XX immuno-castration agents, for suppressing reproductive system
XX development and as immuno-contragestic vaccines.
XX Table II; Page 61; 94pp; English.
XX The sequence is an analogue of mature hCG beta subunit having
XX residues 102-107, 109, 110, and 112-118 replaced by the correspond-
XX ing residues in the hFSH protein. It was prep. by site directed
XX mutagenesis of a cDNA sequence encoding the hCG beta subunit. The
XX chimeric hormone is capable of directing hormone binding to both LH
XX and FSH receptors and may be useful for the treatment of infertility
XX and female animals. (See AAR15043, AAR15061-R15123 and
XX AAR15161-R15198).
XX Sequence. 145 AA;
SQ
Query Match 84.8%; Score 659; DB 12; Length 145;
Best Local Similarity 89.3%; Pred. No. 2.1e-52;
Matches 125; Conservative 2; Mismatches 13; Indels 0; Gaps 0;
Qy 2 SKEPLRRCRPINATLAVKEGCPVCIYVNTTICAGCPMTVRVLSGLVLPALPQVWYR 61
Db 1 SKEPLRRCRPINATLAVKEGCPVCIYVNTTICAGCPMTVRVLSGLVLPALPQVWYR 60
Qy 62 DYRFESIRLPGCPGVNPNVYVAVALSCQALCRRTTDCGPKDHPHTCDDPRFQDS 121
Db 61 DYRFESIRLPGCPGVNPNVYVAVALSCQALCRRTTDCGTVSGLSYDSFGEMKES 120
Qy 122 SKAPPSLPSRLRGPST 141
Db 121 SKAPPSLPSRLRGPST 140
RESULT 142
AAR99526
ID AAR99526 standard; Protein; 142 AA.
XX AAW99526;
XX 08-JUN-1999 (first entry)
XX Glycoprotein hormone analogue hCG-beta'-R6C.Y37C.
XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;
XX human chorionic gonadotropin; human luteinizing hormone; disulphide bond;
XX human follicle stimulating hormone; human thyroid stimulating hormone;
XX stability; primer; amplification; PCR; mutation.
XX Homo sapiens.
XX Synthetic.
XX W09858957-A2.
XX 30-DEC-1998.
XX 25-JUN-1998; 98WO-US13070.
XX 25-JUN-1997; 97US-0050784.

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XX (ISTF ) ARS APPLIED RES SYSTEMS HOLDING NV.
XX (MCIN-) MCINNIS P G.
XX Moyle WR;
XX WPI; 1999-081219/07.
XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH
XX or hTSH, have an intersubunit disulphide crosslink between the
XX alpha- and beta-subunits to improve stability
XX Example 15; Page 97; 139pp; English.
XX The invention relates to the production of analogues of a heterodimeric
XX subunit glycoprotein hormone (e.g. hCG, human follicle stimulating
XX hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional
XX mutants, which are modified to contain an intersubunit disulphide bond,
XX between an alpha-subunit cysteine and a beta-subunit cysteine, for
XX improved stability, the analogue retaining at least a portion of the
XX bioactivity for the corresponding native GPH receptor. This sequence
XX represents a mutated hCG-beta subunit used for the generation of the
XX modified GPHs. The improved analogues are designed specifically to
XX reduce perturbation of the 3-dimensional structure of the hormone, in vivo
XX thereby creating greater stability that chemical treatment of the hormone
XX and stability in male and female animals. The changes stabilise the GPHs and prolong
XX agonistic activity on them. The changes stabilise the GPHs and prolong
XX the biological activities of the hormones. The analogues can have uses
XX as for the native GPHs.
XX Sequence 142 AA;
SQ
Query Match 84.2%; Score 654; DB 20; Length 142;
Best Local Similarity 98.4%; Pred. No. 5.8e-52;
Matches 120; Conservative 0; Mismatches 2; Indels 0; Gaps 0;
Qy 2 SKEPLRRCRPINATLAVKEGCPVCIYVNTTICAGCPMTVRVLSGLVLPALPQVWYR 61
Db 21 SKEPLRRCRPINATLAVKEGCPVCIYVNTTICAGCPMTVRVLSGLVLPALPQVWYR 80
Qy 62 DYRFESIRLPGCPGVNPNVYVAVALSCQALCRRTTDCGPKDHPHTCDDPRFQDS 121
Db 81 DYRFESIRLPGCPGVNPNVYVAVALSCQALCRRTTDCGPKDHPHTCDDPRFQDS 140
Qy 122 SK 123
Db 141 SK 142
RESULT 143
AAR15076
ID AAR15076 standard; Protein; 145 AA.
XX AAR15076;
XX 11-FEB-1992 (first entry)
XX hCG/hFSH chimera, B16.
XX Glycoprotein hormone; fertility; immuno-castration;
XX immuno-contragestic; vaccine; human chorionic gonadotropin;
XX follicle stimulating hormone; FSH; CG;
XX Homo sapiens.
XX W09116922-A.
XX 14-NOV-1991.
XX 07-MAY-1991; 91WO-US03162.
XX 08-MAY-1990; 90US-0520703.

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XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK, Moyle WR;  
 XX WPI: 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-contraction agents for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX Table II; Page 61; 94pp; English.  
 XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 39, 41-43, 45-53, 55, 56, 58, and 94-97 replaced by the  
 CC corresponding residues in the hFSH protein. It was pred. by site  
 CC directed mutagenesis of a cDNA sequence encoding the hCG beta subunit.  
 CC The sequence of the mature hCG beta subunit is identical to both  
 CC LH and FSH receptors and may be useful for inducing fertility  
 CC in men and women and the promotion of fertility in male and female  
 CC animals. (See AAR15043, AAR15061-R15125 and AAR15161-R15198).  
 XX Sequence 145 AA:  
 SQ  
 Query Match 84.0%; Score 653; DB 12; Length 145;  
 Best Local Similarity 85.9%; Pred. No. 7.3e-52;  
 Matches 122; Conservative 4; Mismatches 12; Indels 4; Gaps 2;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTMTVTLQGLVLPALPOV--VCN 59  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTMTVTLQGLVLPALPOV--VCN 59  
 QY 60 YRDFESIRLPQCPGPNVWVYVAVALSCQALCRSTTDCGGPKDHPKLTCDPRFQDS 119  
 DB 59 YRDFESIRLPQCPGPNVWVYVAVALSCQALCRSTTDCGGPKDHPKLTCDPRFQDS 119  
 QY 120 SSSRAPPSLPSPRLPGPSDT 141  
 DB 119 SSSRAPPSLPSPRLPGPSDT 140  
 RESULT 144  
 AAU04603  
 ID AAU04603 standard; Protein: 234 AA.  
 XX  
 AC AAU04603;  
 XX 23-OCT-2001 (first entry)  
 XX Single chain gonadotropin analogue #2.  
 XX Human: glycoprotein hormone; Infertility; in vivo fertilisation;  
 KW single chain gonadotropin.  
 XX Homo sapiens.  
 XX US6242580-B1.  
 XX 05-JUN-2001.  
 XX 31-MAR-1999; 99US-0282357.  
 XX 25-AUG-1997; 97US-0918288.  
 XX 18-FEB-1994; 94US-0199382.  
 XX 12-AUG-1994; 94US-0289396.  
 XX 22-SEP-1994; 94US-0310590.  
 XX 04-NOV-1994; 94US-0334628.  
 XX 07-DEC-1994; 94US-0351591.  
 XX 07-JUN-1995; 95US-0475049.  
 XX 09-MAY-1997; 97US-0853524.  
 XX (UNIM ) UNIV WASHINGTON.  
 XX

PI BoIme I, Moyle WR;  
 XX WPI: 2001-424301/45.  
 DR N-PSDB; AAS08487.  
 XX New single chain forms of the glycoprotein hormone quartet useful for  
 PT generating antibodies specifically immunoreactive with the new  
 PT compounds, in treating infertility, or as aids for in vivo  
 XX fertilization techniques.  
 PS Example 6; Fig 6; 86pp; English.  
 XX The sequence represents the amino acid sequence of single chain  
 CC gonadotropin analogue #2. The glycoprotein hormone analogue is  
 CC useful for generating antibodies specifically immunoreactive with new  
 CC compounds, as a substitute for the heterodimeric forms of the hormones,  
 CC in the treatment of infertility, as an aid for in vivo fertilisation  
 CC techniques, and in other therapeutic methods associated with the native  
 CC hormones. The present invention is directed to a method of producing a  
 CC manner simulating the heterodimer as a diagnostic tool to detect the  
 CC presence of antibodies with respect to the native proteins in the  
 CC biological samples, as a control reagent in assay kits for assessing the  
 CC levels of these hormones in various samples, and in detecting and  
 CC purifying receptors to which the native hormones bind. The single chain  
 CC forms of the heterodimers or homodimers have the following advantages  
 CC over their dimeric forms: they are more stable, problems of recombinant  
 CC production are reduced since only a single gene is needed to transcribe,  
 CC translate and process, provide an alternate form thus permitting fine  
 CC tuning and control of the expression of the protein, and the single chain  
 CC analogue starting materials for identifying truncated forms with the  
 CC activity of the dimer. The linkage between the subunits permits the  
 CC protein to be engineered without disturbing the overall folding of the  
 CC protein.  
 XX Sequence 234 AA:  
 SQ  
 Query Match 83.4%; Score 648; DB 22; Length 234;  
 Best Local Similarity 95.2%; Pred. No. 3.4e-51;  
 Matches 118; Conservative 0; Mismatches 6; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTMTVTLQGLVLPALPOVVCN 61  
 DB 21 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCTMTVTLQGLVLPALPOVVCN 80  
 QY 62 YRDFESIRLPQCPGPNVWVYVAVALSCQALCRSTTDCGGPKDHPKLTCDPRFQDS 121  
 DB 81 YRDFESIRLPQCPGPNVWVYVAVALSCQALCRSTTDCGGPKDHPKLTCDPRFQDS 140  
 QY 122 SKAP 125  
 DB 141 GSNP 144  
 RESULT 145  
 AAU04475  
 ID AAU04475 standard; Protein: 234 AA.  
 XX  
 AC AAU04475;  
 XX 04-SEP-2001 (first entry)  
 XX Human single chain gonadotropin analog no.2.  
 XX Human: single chain gonadotropin analog no.2; anti-infertility; drug;  
 KW peptide therapy; luteinising hormone; LH; follicle stimulating hormone;  
 KW FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;  
 KW glycoprotein; Infertility; fusion protein.  
 XX Homo sapiens.  
 XX Synthetic.  
 XX Key Location/Qualifiers  
 XX Region 21..134  
 FT

FT Region /note= \*Corresponds to 1-114 amino acids of human chorionic gonadotropin (CG) beta-subunit\*

FT 135..142 /note= \*Linker peptide\*

FT 143..234 /note= \*Corresponds to 1-92 amino acids of human single chain gonadotropin alpha subunit\*

XX US6238690-B1.

XX 29-MAY-2001.

XX 25-AUG-1997: 97US-0918288.

XX 18-FEB-1994: 94US-0199382.

XX 12-SEP-1994: 94US-0360396.

XX 22-SEP-1994: 94US-0360396.

XX 04-NOV-1994: 94US-0334628.

XX 07-DEC-1994: 94US-0351591.

XX 07-JUN-1995: 95US-0475049.

XX 09-MAY-1997: 95US-0853524.

XX (UNIW ) UNIV WASHINGTON.

XX Bolme I, Moyle WR;

XX WPI: 2001-366474/38.

XX N-PSDB; RAD08787.

XX New DNA or RNA encoding single chain protein useful in treating infertility, as aids in vitro fertilization techniques, or other therapeutic methods associated with the native hormones.

XX Claim 9: Fig 6: 87pp: English.

XX The invention relates to human single chain forms of the glycoprotein hormone quartet which is an agonist or antagonist of luteinizing hormone (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone (TSH) or human chorionic gonadotropin (CG). These hormones are heterodimers having identical alpha subunits and different beta subunits. The agonist forms of single chain hormones are used in treating infertility, as aids in vitro fertilization techniques, and other therapeutic methods associated with the native hormones. The single chain hormones are useful as reagents in a manner similar to heterodimers, as diagnostic tools to detect the presence of antibodies with respect to the native proteins in biological samples, as control reagents in assay kits for assessing the levels of these hormones in various samples, in detecting and purifying the forms with which the native hormones bind, the single chain hormones are also used in vitro to detect the presence of receptors or antibodies for these hormones. They are used as purification tools for the isolation of subsequent preparations of these materials and to monitor levels of single chain hormones administered as drugs. The single chain glycoproteins are used to generate antibodies specifically immunoreactive with these new compounds, as substitutes for the heterodimeric forms of hormones. The present sequence is human single chain gonadotropin analog no:2 related to the invention. Analog no:2 is a fusion protein consisting of human chorionic gonadotropin (CG) beta-subunit (1-114 amino acids) fused to human single chain gonadotropin alpha-subunit (1-92 amino acids) by a linker peptide. This analog serves as a useful starting compound for template directed vaccination and for the development of hormone-specific vaccines for use in humans.

XX Sequence 234 AA:

Query Match 83.4%; Score 648; DB 22; Length 234;  
Best Local Similarity 95.2%; Pred. No. 3.4e-51;  
Matches 118; Conservative 0; Mismatches 6; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEEGCPVCITVTTCAGTCPTMTNRVLQGVLPALPOVQVNR 61  
DB 21 SKEPLRPRCPINATLAVEEGCPVCITVTTCAGTCPTMTNRVLQGVLPALPOVQVNR 80

QY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPITCDPRGSGS 121

DB 81 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPITCDPRGSGS 140  
QY 122 SKAP 125  
DB 141 GSAP 144

RESULT 146  
AAR15162  
ID AAR15162 standard; Protein; 116 AA.  
XX AAR15162;  
XX 11-FEB-1992 (first entry)  
XX hCG deletion mutant, F2.  
XX Glycoprotein hormone; immuno-castration;  
XX immuno-contragastic; vaccine; human chorionic gonadotropin;  
XX Homo sapiens.  
XX MO9116922-A.  
XX 14-NOV-1991.  
XX 07-MAY-1991: 91MO-US03162.  
XX 08-MAY-1990: 90US-0520703.  
XX (UYNE-) UNIV MED NEW JERSEY.  
XX Campbell RK, Moyle WR;  
XX WPI: 1991-353528/48.  
XX New glyco-protein hormone analogues - for inducing fertility as immuno-castration agents, for suppressing reproductive system development and as immuno-contragastic vaccines.  
XX Table VII: Page 66; 94pp: English.  
XX The sequence is an analogue of mature hCG beta subunit having residues 117-145 deleted. It was prep'd. using PCR mutagenesis to insert a stop codon into the gene. It may be useful as an agonist for suppression of gonadal activity during chemotherapy.  
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
XX Sequence 116 AA:

Query Match 82.9%; Score 644; DB 12; Length 116;  
Best Local Similarity 100.0%; Pred. No. 3.8e-51;  
Matches 116; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEEGCPVCITVTTCAGTCPTMTNRVLQGVLPALPOVQVNR 61  
DB 1 SKEPLRPRCPINATLAVEEGCPVCITVTTCAGTCPTMTNRVLQGVLPALPOVQVNR 60  
QY 62 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPITCDPRG 117  
DB 61 DVRFESIRLPGCPGVNPNVSYVALSCQALCRSTTDCGPKDHPITCDPRG 116

RESULT 147  
AAY43282  
ID AAY43282 standard; Protein; 212 AA.  
XX AAY43282;  
XX 19-JAN-2000 (first entry)  
XX HCG/FESH beta subunit-Jun fusion protein sequence.

XX Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;  
 KW beta subunit; therapy; Jun.  
 XX Homo sapiens.  
 OS Synthetic.  
 DN W09953065-A1.  
 XX 21-OCT-1999.  
 XX 13-APR-1999; 99MO-US08018.  
 XX 14-APR-1998; 98US-0059625.  
 XX (UYNE-) UNIV NEW JERSEY.  
 PT Moyle WR.  
 XX MPI: 1999-620431/53.  
 XX Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins.  
 XX Example 4; Fig 17; 73pp; English.  
 XX This sequence is a fusion protein of hCG/hFSH and Jun. The invention  
 CC relates to a method of forming a cysteine knot protein (I) having alpha  
 CC and beta subunits comprising attaching a dimerisation domain (DD) to  
 CC either the N-terminus of both subunits or the C-terminus of the  
 CC alpha-subunit and to the C-terminus of the beta-subunit and dimerising  
 CC the products to form a heterodimeric protein analog (II). The method is  
 CC used to produce analogues (agonists or antagonists) of deglycosylated  
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility  
 CC where caused by polycystic ovarian disease (associated with excessive  
 CC levels of luteinising hormone). Products that retain DD's are also useful  
 CC as immunogens or antigens (since a DD may contain highly antigenic  
 CC amino acid sequences). Attachment of a DD (which may be removed later)  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC and thus receptor-binding and immunogenic properties) to native dimers,  
 CC and allows the formation of heterodimers, that have similar structures  
 CC and thus receptor-binding and immunogenic properties) to native dimers,  
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC formation of homodimers. Heterodimers have longer circulation times in  
 CC vivo than individual subunits.  
 XX Sequence 212 AA;  
 SQ  
 Query Match 82.4%; Score 640; DB 20; Length 212;  
 Best Local Similarity 86.4%; Pred. No. 1.6e-50;  
 Matches 121; Conservative 3; Mismatches 16; Indels 0; Gaps 0;  
 OY 2 SKEPLPRCPINATLAVKESGCPVITVTTCAGYCPMTVRVVGQVLPALPOVVCNVR 61  
 DB 68 SKEPLPRCPINATLAVKESGCPVITVTTCAGYCPMTVRVVGQVLPALPOVVCNVR 127  
 OY 62 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 121  
 DB 128 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 187  
 OY 122 SKAPPSLPSPRLPGPSDT 141  
 DB 188 SKAPPSLPSPRLPGPSDT 207  
 RESULT 148  
 ID AAY43289  
 XX AAY43289 standard; Protein: 273 AA.  
 AC AAY43289;  
 XX

DT 19-JAN-2000 (first entry)  
 XX HCG/hFSH beta subunit-Jun fusion protein sequence.  
 XX Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;  
 KW beta subunit; therapy; Jun.  
 XX Homo sapiens.  
 OS Synthetic.  
 DN W09953065-A1.  
 XX 21-OCT-1999.  
 XX 13-APR-1999; 99MO-US08018.  
 XX 14-APR-1998; 98US-0059625.  
 XX (UYNE-) UNIV NEW JERSEY.  
 PT Moyle WR.  
 XX MPI: 1999-620431/53.  
 XX Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins.  
 XX Example 6; Fig 18; 73pp; English.  
 XX This sequence is a fusion protein of hCG/hFSH and Jun. The invention  
 CC relates to a method of forming a cysteine knot protein (I) having alpha  
 CC and beta subunits comprising attaching a dimerisation domain (DD) to  
 CC either the N-terminus of both subunits or the C-terminus of the  
 CC alpha-subunit and to the C-terminus of the beta-subunit and dimerising  
 CC the products to form a heterodimeric protein analog (II). The method is  
 CC used to produce analogues (agonists or antagonists) of deglycosylated  
 CC glycoprotein hormones, potentially useful, e.g. for treating infertility  
 CC where caused by polycystic ovarian disease (associated with excessive  
 CC levels of luteinising hormone). Products that retain DD's are also useful  
 CC as immunogens or antigens (since a DD may contain highly antigenic  
 CC amino acid sequences). Attachment of a DD (which may be removed later)  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC and thus receptor-binding and immunogenic properties) to native dimers,  
 CC and allows the formation of heterodimers, that have similar structures  
 CC and thus receptor-binding and immunogenic properties) to native dimers,  
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC formation of homodimers. Heterodimers have longer circulation times in  
 CC vivo than individual subunits.  
 XX Sequence 273 AA;  
 SQ  
 Query Match 82.4%; Score 640; DB 20; Length 273;  
 Best Local Similarity 86.4%; Pred. No. 2.1e-50;  
 Matches 121; Conservative 3; Mismatches 16; Indels 0; Gaps 0;  
 OY 2 SKEPLPRCPINATLAVKESGCPVITVTTCAGYCPMTVRVVGQVLPALPOVVCNVR 61  
 DB 129 SKEPLPRCPINATLAVKESGCPVITVTTCAGYCPMTVRVVGQVLPALPOVVCNVR 188  
 OY 62 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 121  
 DB 189 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 248  
 OY 122 SKAPPSLPSPRLPGPSDT 141  
 DB 249 SKAPPSLPSPRLPGPSDT 268  
 RESULT 149  
 ID AAY43296  
 XX AAY43296 standard; Protein: 273 AA.

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XX AAY41296;
XX 19-JAN-2000 (first entry)
XX HCG/HFSH beta subunit-Jun fusion protein sequence.
XX Cysteine knot protein; protein formation; heterodimeric protein analog;
XX deglycosylated; glycoprotein hormone; fertility;
XX polycystic ovarian disease; hCG; human; chorionic gonadotropin;
XX beta subunit; therapy; Jun.
XX Homo sapiens.
XX Synthetic.
XX W09953065-A1.
XX 21-OCT-1999.
XX 13-APR-1999; 99WO-US08018.
XX 14-APR-1998; 98US-0059625.
XX (UYNE-) UNIV NEW JERSEY.
XX Moyle WR;
XX WPT; 1999-620431/53.
XX Methods for producing heterodimers, particularly analogues of hormones,
XX from subunits of cysteine knot proteins.
XX Example 6; Fig 19; 73pp; English.
XX This sequence is a fusion protein of HCG/HFSH and Jun. The invention
XX relates to a method of forming a cysteine knot protein (i) having alpha
XX and beta-subunits comprising attaching a dimerisation domain (DD) to
XX either the N-termini of both subunits or the N-terminus of the
XX alpha-subunit and to the C-terminus of the beta-subunit and dimerising
XX the subunits to form a heterodimeric protein. The heterodimeric protein
XX is used to produce analogues (agonists or antagonists) of luteinising hormone
XX or glycoprotein hormones, potentially useful, e.g. for treating infertility
XX where caused by polycystic ovarian disease (associated with excessive
XX levels of luteinising hormone). Products that retain DD's are also useful
XX as immunogens or antigens (since a DD may contain highly antigenic
XX amino acid sequences). Attachment of a DD (which may be removed later)
XX facilitates the formation of heterodimers, that have similar structures
XX (and thus receptor-binding and immunogenic properties) to native dimers,
XX and allows the combination of subunits that would otherwise combine
XX and form a homodimer. The heterodimeric protein is a glycoprotein hormone
XX that may be modified without loss of activity and attached to a carrier
XX for formation of homodimers. Heterodimers have longer circulation times in
XX vivo than individual subunits.
XX Sequence 273 AA:
XX
XX Query Match 82.4%; Score 640; DB 20; Length 273;
XX Best Local Similarity 86.4%; Pred. No. 2.1e-50;
XX Matches 121; Conservative 3; Mismatches 16; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRPRCPINATLAVEKGGCPVCIYNTTTCAGYCPPTWTRVLOGVLPALPQVVCNVR 61
XX DB 129 SKEPLRPRCPINATLAVEKGGCPVCIYNTTTCAGYCPPTWTRVLOGVLPALPQVVCNVR 188
XX
XX QY 62 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 121
XX DB 189 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 248
XX
XX QY 122 SKAPPSLPSPSLRPGSDT 141
XX DB 249 SKAPPSLPSPSLRPGSDT 268

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```

RESULT 150
AAR86248
ID AAR86248 standard; Protein; 234 AA.
XX
XX AAR86248;
XX 26-APR-1996 (first entry)
XX Single chain gonadotropin analogue 2.
XX Single chain gonadotropin analogue 2.
XX alpha; beta; subunit; analogue; human chorionic gonadotropin; hCG;
XX inhibit; stimulate; increase; lutropin; luteinising hormone; LH;
XX follicle stimulating hormone; FSH; vaccine; contraceptive.
XX Synthetic.
XX Location/Qualifiers
XX Key 1..30
XX Peptide /label= leader
XX Region 21..134
XX /label= hCG_beta_subunit_(1-114)
XX Misc-difference 70
XX /note= "Arg corresponds to CCG codon"
XX Region 135..142
XX /label= linker
XX Region 143..234
XX /label= Gonadotropin_alpha_subunit_(1-92)
XX
XX W09522340-A1.
XX 24-AUG-1995.
XX 17-FEB-1995; 95WO-US02067.
XX 18-FEB-1994; 94US-0199382.
XX (SENS-) SENSI-TEST.
XX Moyle WR;
XX WPT; 1995-302553/39.
XX N-PSDB; AAT03219.
XX Methods for altering fertility in mammals, esp. humans - e.g.
XX stimulating fertility by reducing the activity and/or levels of
XX circulating glyco:protein hormones having lutropin activity
XX
XX Example 13 and Claim 39; Fig 7; 102pp; English.
XX Analogue 2 (human CG-beta(1-114)-linker-human CG-alpha(1-92)) is a
XX specific example of a single chain gonadotropin having a chorionic
XX gonadotropin (CG) beta-subunit at the N-terminus and a CG alpha-
XX subunit at the C-terminus, joined by a linker of 1-16 amino acids.
XX The analogue has luteinising hormone (lutropin) activity and is
XX useful for inducing ovulation and increasing male fertility.
XX
XX Sequence 234 AA:
XX
XX Query Match 82.2%; Score 639; DB 16; Length 234;
XX Best Local Similarity 94.4%; Pred. No. 2.2e-50;
XX Matches 117; Conservative 0; Mismatches 7; Indels 0; Gaps 0;
XX
XX QY 2 SKEPLRPRCPINATLAVEKGGCPVCIYNTTTCAGYCPPTWTRVLOGVLPALPQVVCNVR 61
XX DB 21 SKEPLRPRCPINATLAVEKGGCPVCIYNTTTCAGYCPPTWTRVLOGVLPALPQVVCNVR 80
XX
XX QY 62 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 121
XX DB 81 DYRFESIRLPGCPGVNPNVSVYVALSCQCALCRSTTDCGPKDHPKPLTCDPRFQSSS 140
XX
XX 122 SKAP 125
XX

```

Db 141 GSAP 144

RESULT 151

AA04509 standard; Protein: 145 AA.

AC AAR15073;

DT 11-FEB-1992 (first entry)

XX HCG/HFSH chimera, B13.

XX Glycoprotein hormone; fertility; immuno-castration;

XX immuno-contragestive; vaccine; human chorionic gonadotropin;

XX follicle stimulating hormone; FSH; CG;

XX Homo sapiens.

XX WO9116922-A.

XX 14-NOV-1991.

XX 07-MAY-1991; 91WO-US03162.

XX 08-MAY-1990; 90US-0320703.

XX (UYNE-) UNIV MED NEW JERSEY.

XX Campbell RK, Moyle WR;

XX WPI: 1991-353528/48.

XX New glyco-protein hormone analogues - for inducing fertility as

XX immuno-contragestion agents, for suppressing reproductive system

XX development and as immuno-contragestive vaccines.

XX Table II: Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having

XX residues 94-97, 102-107, 109, 110, and 112-118 replaced by the

XX corresponding residues in the hFSH protein. It was prep. by

XX site directed mutagenesis of a cDNA sequence encoding the hCG beta

XX subunit. The chimeric hormone is capable of directing hormone

XX binding to both LH and FSH receptors and may be useful for the

XX treatment of infertility in men and women and the promotion of

XX fertility in male and female animals. (See AAR15061-R15125

XX and AAR15161-R15198).

XX Sequence 145 AA:

Query Match 82.1%; Score 638; DB 12; Length 145;

Best Local Similarity 86.4%; Pred. No. 1.7e-50;

Matches 121; Conservative 3; Mismatches 16; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKGCPCVITVTTCGCTMTVRVGVLPALPQVNCNR 61

Db 1 SKEPLRPRCPINATLAVEKGCPCVITVTTCGCTMTVRVGVLPALPQVNCNR 60

QY 62 DVRFESIRLPGCPVNPVYVYVALSCCALCRRTSDCGGPKDHPILCTDPRPDSSS 121

Db 61 DVRFESIRLPGCPVNPVYVYVALSCCALCRRTSDCGGPKDHPILCTDPRPDSSS 120

QY 122 SKAPPSPSPSRPLPGSDT 141

Db 121 SKAPPSPSPSRPLPGSDT 140

RESULT 152

AAE04509

ID AAE04509 standard; Protein: 234 AA.

AC AAE04509;

XX 04-SEP-2001 (first entry)

XX Human single chain gonadotropin analog no:2a.

XX Human; single chain gonadotropin analog no:2a; anti-infertility; drug;

XX peptide therapy; luteinising hormone; LH; follicle stimulating hormone;

XX FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;

XX glycoprotein; infertility; fusion protein; mutant; mutein.

XX Homo sapiens.

XX Synthetic.

XX Key Location/Qualifiers

XX Region 21..134

XX /note= "Corresponds to 1-114 amino acids of human

XX chorionic gonadotropin (CG) beta-subunit"

XX Misc-difference 33

XX /note= "Wild type Asn substituted with Xaa, Where Xaa

XX refers to Gln or other amino acid"

XX Misc-difference 50

XX /note= "Wild type Asn substituted with Xaa, Where Xaa

XX refers to Gln or other amino acid"

XX Region 135..142

XX /note= "Linker peptide"

XX Region 143..234

XX /note= "Corresponds to 1-92 amino acids of human single

XX chain gonadotropin alpha-subunit"

XX Misc-difference 194

XX /note= "Wild type Asn substituted with Xaa, Where Xaa

XX refers to Gln or other amino acid"

XX Misc-difference 220

XX /note= "Wild type Asn substituted with Xaa, Where Xaa

XX refers to Gln or other amino acid"

XX USG238890-B1.

XX 29-MAY-2001.

XX 25-AUG-1997; 97US-0918288.

XX 18-FEB-1994; 94US-0199382.

XX 12-AUG-1994; 94US-0289396.

XX 22-SEP-1994; 94US-0310590.

XX 04-NOV-1994; 94US-0334628.

XX 07-DEC-1994; 94US-0351591.

XX 07-JUN-1995; 95US-0475049.

XX 09-MAY-1997; 97US-0853524.

XX (UNIW ) UNIV WASHINGTON.

XX Bolme I, Moyle WR;

XX WPI: 2001-366474/38.

XX New DNA or RNA encoding single chain protein useful in treating

XX infertility, as aids in vitro fertilization techniques, or other

XX therapeutic methods associated with the native hormones .

XX Claim 9; Column -; 87pp; English.

XX The invention relates to human single chain forms of the glycoprotein

XX hormone gonadotropin, an agonist, antagonist or luteinising hormone

XX (LH), follicle stimulating hormone (FSH), thyroid stimulating

XX hormone (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers

XX having identical alpha subunits and differing beta subunits. The agonist

XX forms of single chain hormones are used in treating infertility, as aids

XX in vitro fertilisation techniques, and other therapeutic methods

XX associated with the native hormones. The single chain hormones are useful

XX as reagents in a manner similar to heterodimers, as diagnostic tools to

XX detect the presence of antibodies with respect to the native proteins in

XX biological samples, as control reagents in assay kits for assessing the

XX levels of these hormones in various samples, in detecting and purifying

receptors to which the native hormones bind. The single chain hormones are also used in affinity chromatographic preparation of receptors or antihormone antibodies. They are used as purification tools for isolation of subsequent preparations of these materials and to monitor levels of single chain hormones administered as drugs. The single chain glycoproteins are used to generate antibodies specifically immunoreactive with these new compounds, as substitutes for the heterodimeric forms of chorionic gonadotropin. The present sequence is human single chain gonadotropin analog no:2 consisting of human chorionic gonadotropin (CG) beta-subunit (1-114 amino acids) fused to human single chain gonadotropin alpha-subunit (1-92 amino acids) by a linker sequence. This analog serves as a useful starting compound for template directed vaccine design and for the development of hormone-specific vaccines for use in humans.

Note: The present sequence is not shown in the specification, but is derived from the human single chain gonadotropin analog no:2 shown as SEQ ID NO: 6, in figure 6 of the specification (AAE04475).

XX Sequence 234 AA;

Query Match 81.6%; Score 614; DB 22; Length 234;  
Best Local Similarity 93.3%; Pred. No. 6.2e-50;  
Matches 116; Conservative 0; Mismatches 8; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITGAGYCPMTVRVLQVLPALPQVYCNHR 61  
DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTITGAGYCPMTVRVLQVLPALPQVYCNHR 80  
QY 62 DVRESIRLPGCPGVNPPVSYAVALSOCALCRSTTDCGPKHPLTCDPRFDDSS 121  
DB 81 DVRESIRLPGCPGVNPPVSYAVALSOCALCRSTTDCGPKHPLTCDPRFDDSS 140

QY 122 SKAP 125  
DB 141 GSAP 144

RESULT 153

AAU04620  
AAU04620 standard; protein; 114 AA.

XX AAU04620;

DT 23-OCT-2001 (first entry)

DE Human chorionic gonadotropin (hCG) beta, amino acids 1-114.

XX Human; chorionic gonadotropin; hCG; glycoprotein hormone; infertility;  
KW luteinising hormone; LH; follicle stimulating hormone; FSH;  
KW Thyroid stimulating hormone; TH.

XX Homo sapiens.

XX US6242580-B1.

XX 05-JUN-2001.

XX 31-MAR-1999; 99US-0282357.

XX 25-AUG-1997; 97US-0918288.

XX 18-FEB-1994; 94US-0199382.

XX 12-AUG-1994; 94US-0289396.

XX 22-SEP-1994; 94US-0310590.

XX 04-NOV-1994; 94US-0334628.

XX 07-DEC-1994; 95US-0425243.

XX 07-JUN-1995; 95US-0425243.

XX 09-MAY-1997; 97US-0853524.

XX (UNIV ) UNIV WASHINGTON.

XX Boime I, Moyle WR;

XX WPI; 2001-424301/45.

XX New single chain forms of the glycoprotein hormone quartet useful for  
PT generating antibodies specifically immunoreactive with the new  
PT compounds, in treating infertility, or as aids for in vivo  
PT fertilization techniques -  
XX Example 19; Column 34; 86pp; English.  
XX The sequence represents the amino acid sequence of human chorionic  
XX gonadotropin (hCG) beta-subunit amino acids 1-114. The protein is an  
XX important glycoprotein hormone heterodimer, along with luteinizing  
XX hormone (LH), follicle stimulating hormone (FSH), thyroid stimulating  
XX hormone (TH), which all have identical alpha subunits but differing beta  
XX subunits. The proteins are useful for generating antibodies specifically  
XX immunoreactive with new compounds, as substitutes for the  
XX heterodimeric forms of the hormones, in the treatment of infertility, as  
XX aids for in vivo fertilization techniques, and in other therapeutic  
XX methods associated with the native hormones. The single chain proteins  
XX are further useful as reagents in a manner similar to the heterodimers,  
XX and they are useful in the biological samples as control reagents in  
XX assay kits for assessing the levels of these hormones in various samples,  
XX and in detecting and purifying receptors to which the native hormones  
XX bind. The single chain forms of the heterodimers or homodimers have the  
XX following advantages over their dimeric forms: they are more stable,  
XX problems of recombinant production are reduced since only a single gene  
XX is needed to transcribe, translate and process, provide an alternate form  
XX thus permitting fine tuning of activity levels and of in vivo half lives.  
XX Single chain forms are unique starting materials for identifying  
XX functional forms with the activity of the dimer. The linkage between the  
XX subunits of the protein is not to be engineered without disturbing the  
XX overall folding of the protein.

SQ Sequence 114 AA;

Query Match 81.5%; Score 633; DB 22; Length 114;

Best Local Similarity 100.0%; Pred. No. 3.7e-50;

Matches 114; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITGAGYCPMTVRVLQVLPALPQVYCNHR 61

DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTITGAGYCPMTVRVLQVLPALPQVYCNHR 60

QY 62 DVRESIRLPGCPGVNPPVSYAVALSOCALCRSTTDCGPKHPLTCDPR 115

DB 61 DVRESIRLPGCPGVNPPVSYAVALSOCALCRSTTDCGPKHPLTCDPR 114

RESULT 154

AAE04492

XX AAE04492 standard; Protein; 114 AA.

XX AAE04492;

DT 04-SEP-2001 (first entry)

DE Human chorionic gonadotropin beta-subunit fragment (1-114 amino acids).

XX Human; single chain gonadotropin analog; anti-infertility; drug;

XX peptide therapy; luteinising hormone; LH; follicle stimulating hormone;

XX FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;

XX glycoprotein; infertility; fusion protein.

XX Homo sapiens.

XX US6238890-B1.

XX 29-MAY-2001.

XX 25-AUG-1997; 97US-0918288.

XX 18-FEB-1994; 94US-0199382.

XX 12-AUG-1994; 94US-0289396.

22-SEP-1994: 94US-0310590.  
 04-NOV-1994: 94US-0334628.  
 07-DEC-1994: 94US-0351591.  
 07-JUN-1995: 95US-0475049.  
 09-MAY-1997: 97US-0853524.  
 (UNIW ) UNIV WASHINGTON.  
 Boime I., Moyle WR;  
 WPI: 2001-366474/38.  
 New DNA or RNA encoding single chain protein useful in treating infertility, as aids in vitro fertilization techniques, or other therapeutic methods associated with the native hormones  
 Example 19: Column 33; 87pp; English.  
 The invention relates to human single chain forms of the glycoprotein hormone quartet which is an agonist or antagonist of luteinizing hormone (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone (TSH), growth hormone releasing hormone (GRH), and chorionic gonadotropin (CG). These hormones have identical alpha subunits and differing beta subunits. The agonists have identical alpha subunits and differing beta subunits. The agonists forms of single chain hormones are used in treating infertility, as aids in vitro fertilization techniques, and other therapeutic methods associated with the native hormones. The single chain hormones are useful as reagents in a manner similar to heterodimers, as diagnostic tools to detect the presence of antibodies with respect to the native proteins in biological samples, as control reagents in assay kits for assessing the levels of these hormones in various samples, in detecting and purifying these hormones, and in the study of the biological effects of these hormones. They are also used in affinity chromatographic preparation of receptors or antibody hormones. They are used as purification tools for isolation of subsequent preparations of these materials and to monitor levels of single chain hormones administered as drugs. The single chain glycoproteins are used to generate antibodies specifically immunoreactive with these new compounds, as substitutes for the heterodimeric forms of hormones. The present sequence is human chorionic gonadotropin beta-subunit fragment (1-114 amino acids) which is used for constructing single chain gonadotropin analogs related to the invention. Analog fusion proteins serves as useful starting compounds for template directed vaccine design and for the development of hormone-specific vaccines for use in humans.

Query Match 81.5%; Score 633; DB 22; Length 114;  
 Best Local Similarity 100.0%; Pred. No. 3.7e-50;  
 Matches 114; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVREKGPVCIVTNTICAGYCPPTMTVQLQVLPALQVQVNCNR 61  
 DB 1 SKEPLRPRCPINATLAVREKGPVCIVTNTICAGYCPPTMTVQLQVLPALQVQVNCNR 60  
 QY 62 DYRFESTRLPGCPGVNPVSVYVALSCCALCRSTTDCGGPKDHPITCDPDR 115  
 DB 61 DYRFESTRLPGCPGVNPVSVYVALSCCALCRSTTDCGGPKDHPITCDPDR 114  
 RESULT 155  
 AAY43283  
 ID AAY43283 standard; Protein: 212 AA.  
 XX  
 AC AAY43283;  
 DT 19-JAN-2000 (first entry)  
 DE HCG/HTSH beta subunit-Jun fusion protein sequence.  
 KW Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; HCG; human; chorionic gonadotropin;  
 KW beta subunit; therapy; Jun.

XX Homo sapiens.  
 OS Synthetic.  
 XX MO9953065-A1.  
 XX 21-OCT-1999.  
 XX 13-APR-1999; 99MO-US08018.  
 XX 14-APR-1998; 98US-0059625.  
 XX (UYNE-) UNIV NEW JERSEY.  
 XX Moyle WR;  
 XX WPI: 1999-620431/53.  
 Methods for producing heterodimers, particularly analogues of hormones, from subunits of cysteine knot proteins  
 Example 4: Fig 17; 73pp; English.  
 This sequence is a fusion protein of hCG/HTSH and Jun. The invention relates to a method of forming a cysteine knot protein (I) having alpha and beta subunits comprising attaching a dimerisation domain (DD) to either the N-termini of both subunits or the C-termini of the alpha-subunit and to the C-termini of the beta-subunit and dimerising the products to form a heterodimeric protein analog (II). The method is used to produce analogues (agonists or antagonists) of deglycosylated glycoprotein hormones, such as luteinizing hormone (LH), follicle stimulating hormone (FSH), growth hormone releasing hormone (GRH), and chorionic gonadotropin (CG). These hormones have identical alpha subunits and differing beta subunits. The agonists have identical alpha subunits and differing beta subunits. The agonists forms of single chain hormones are used in treating infertility, as aids in vitro fertilization techniques, and other therapeutic methods associated with the native hormones. The single chain hormones are useful as reagents in a manner similar to heterodimers, as diagnostic tools to detect the presence of antibodies with respect to the native proteins in biological samples, as control reagents in assay kits for assessing the levels of these hormones in various samples, in detecting and purifying these hormones, and in the study of the biological effects of these hormones. They are also used in affinity chromatographic preparation of receptors or antibody hormones. They are used as purification tools for isolation of subsequent preparations of these materials and to monitor levels of single chain hormones administered as drugs. The single chain glycoproteins are used to generate antibodies specifically immunoreactive with these new compounds, as substitutes for the heterodimeric forms of hormones. The present sequence is human chorionic gonadotropin beta-subunit fragment (1-114 amino acids) which is used for constructing single chain gonadotropin analogs related to the invention. Analog fusion proteins serves as useful starting compounds for template directed vaccine design and for the development of hormone-specific vaccines for use in humans.

Query Match 81.2%; Score 631; DB 20; Length 212;  
 Best Local Similarity 85.7%; Pred. No. 1.1e-49;  
 Matches 120; Conservative 2; Mismatches 18; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVREKGPVCIVTNTICAGYCPPTMTVQLQVLPALQVQVNCNR 61  
 DB 68 SKEPLRPRCPINATLAVREKGPVCIVTNTICAGYCPPTMTVQLQVLPALQVQVNCNR 127  
 QY 62 DYRFESTRLPGCPGVNPVSVYVALSCCALCRSTTDCGGPKDHPITCDPDRFDS 121  
 DB 128 DYRFESTRLPGCPGVNPVSVYVALSCCALCRSTTDCGGPKDHPITCDPDRFDS 187  
 QY 122 SKAPPSLPSPSRPLPGPSDT 141  
 DB 188 SKAPPSLPSPSRPLPGPSDT 207  
 RESULT 156  
 AAY43290  
 ID AAY43290 standard; Protein: 273 AA.  
 XX  
 AC AAY43290;  
 DT 19-JAN-2000 (first entry)  
 DE HCG/HTSH beta subunit-Jun fusion protein sequence.  
 KW Cysteine knot protein; protein formation; heterodimeric protein analog;



KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;  
 KW beta subunit; therapy; Jun.  
 OS Homo sapiens.  
 OS Synthetic.  
 PA WO9953065-A1.  
 XX 21-OCT-1999.  
 XX 13-APR-1999; 99WO-US08018.  
 XX 14-APR-1998; 98US-0059625.  
 XX (UYNE-) UNIV NEW JERSEY.  
 XX Moyle WR;  
 XX WPI: 1999-620431/53.  
 PT Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins -  
 XX Example 6; Fig 18; 73pp; English.  
 XX This sequence is a fusion protein of hCG/HTSH and Jun. The invention  
 relates to a method of forming a cysteine knot protein (I) having alpha  
 and beta subunits comprising attaching a dimerisation domain (DD) to  
 either the N-terminus of the N-terminus of the alpha subunit or the  
 alpha subunit and the C-terminus of the beta subunit and dimerising  
 the products to form a heterodimeric protein analog (II). The method is  
 used to produce analogues (agonists or antagonists) of deglycosylated  
 glycoprotein hormones, potentially useful, e.g. for treating infertility  
 where caused by polycystic ovarian disease (associated with excessive  
 levels of luteinising hormone). Products that retain DD's are also useful  
 as immunogens or antigens (since a DD may contain highly antigenic  
 amino acid sequences). Attachment of a DD (which may be removed later)  
 facilitates the formation of heterodimers, that have similar structures  
 (and thus receptor-binding and immunogenic properties) to native dimers,  
 and allows the combination of subunits that would otherwise combine  
 poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 be modified without loss of activity, and attachment of the DD reduces  
 formation of homodimers. Heterodimers have longer circulation times in  
 vivo than individual subunits.  
 XX Sequence 273 AA:  
 Query Match 81.2%; Score 631; DB 20; Length 273;  
 Best Local Similarity 85.7%; Pred. No. 1.4e-49;  
 Matches 120; Conservative 2; Mismatches 18; Indels 0; Gaps 0;  
 QY 2 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTNRLVQLGVPALPQVYCNVR 61  
 DB 129 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTNRLVQLGVPALPQVYCNVR 188  
 QY 62 DYRFESIRLPCPGVNPVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 121  
 DB 189 DYRFESIRLPCPGVNPVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 248  
 QY 122 SKAPPSLPSPRLPGPSDT 141  
 DB 249 SKAPPSLPSPRLPGPSDT 268  
 RESULT 157  
 AAY43297  
 ID AAY43297 standard; Protein: 273 AA.  
 XX  
 AC AAY43297;  
 XX  
 DT 19-JAN-2000 (first entry)  
 XX

DE HCG/HTSH beta subunit-Jun fusion protein sequence.  
 XX Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogen; antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotrophin;  
 KW beta subunit; therapy; Jun.  
 XX Homo sapiens.  
 OS Synthetic.  
 PA WO9953065-A1.  
 XX 21-OCT-1999.  
 XX 13-APR-1999; 99WO-US08018.  
 XX 14-APR-1998; 98US-0059625.  
 XX (UYNE-) UNIV NEW JERSEY.  
 XX Moyle WR;  
 XX WPI: 1999-620431/53.  
 PT Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins -  
 XX Example 6; Fig 19; 73pp; English.  
 XX This sequence is a fusion protein of hCG/HTSH and Jun. The invention  
 relates to a method of forming a cysteine knot protein (I) having alpha  
 and beta subunits comprising attaching a dimerisation domain (DD) to  
 either the N-terminus of the N-terminus of the alpha subunit or the  
 alpha subunit and the C-terminus of the beta subunit and dimerising  
 the products to form a heterodimeric protein analog (II). The method is  
 used to produce analogues (agonists or antagonists) of deglycosylated  
 glycoprotein hormones, potentially useful, e.g. for treating infertility  
 where caused by polycystic ovarian disease (associated with excessive  
 levels of luteinising hormone). Products that retain DD's are also useful  
 as immunogens or antigens (since a DD may contain highly antigenic  
 amino acid sequences). Attachment of a DD (which may be removed later)  
 facilitates the formation of heterodimers, that have similar structures  
 (and thus receptor-binding and immunogenic properties) to native dimers,  
 and allows the combination of subunits that would otherwise combine  
 poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 be modified without loss of activity, and attachment of the DD reduces  
 formation of homodimers. Heterodimers have longer circulation times in  
 vivo than individual subunits.  
 XX Sequence 273 AA:  
 Query Match 81.2%; Score 631; DB 20; Length 273;  
 Best Local Similarity 85.7%; Pred. No. 1.4e-49;  
 Matches 120; Conservative 2; Mismatches 18; Indels 0; Gaps 0;  
 QY 2 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTNRLVQLGVPALPQVYCNVR 61  
 DB 129 SKEPLRRCRPNATLAVEKEGCPVCITVTTCAGYCPMTNRLVQLGVPALPQVYCNVR 188  
 QY 62 DYRFESIRLPCPGVNPVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 121  
 DB 189 DYRFESIRLPCPGVNPVSVYVALSCQALCRSTTDCGPKDHPILTCDDPRFQSSS 248  
 QY 122 SKAPPSLPSPRLPGPSDT 141  
 DB 249 SKAPPSLPSPRLPGPSDT 268  
 RESULT 158  
 AAR15172  
 ID AAR15172 standard; Protein: 116 AA.  
 XX  
 AC AAR15172;  
 XX

XX 11-FEB-1992 (first entry)  
 XX HCG methionine substitution mutant, G4.  
 DE Glycoprotein hormone; human chorionic gonadotropin; disulphide.  
 XX Homo sapiens.  
 OS  
 PN MO9116922-A.  
 XX 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 PA Campbell RK, Moyle WR;  
 PI WPI; 1991-353528/48.  
 XX  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.  
 XX  
 PS Table VIII; Page 67; 94pp; English.  
 XX  
 CC The sequence is an analogue of mature hCG beta subunit having  
 CC residues 109 and 110 replaced by methionine and alanine residues  
 CC respectively, and residues 117-145 deleted. This introduces an  
 CC additional cleavage site for CNBr, useful for determining the  
 CC disulphide bonds. This can be used to show that mutagenesis has  
 CC not altered the "normal" disulphide pattern of analogues, and for  
 CC examining protein folding.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
 XX  
 SQ Sequence 116 AA;  
 Query Match 81.0%; Score 629; DB 12; Length 116;  
 Best Local Similarity 98.3%; Pred. No. 8.7e-50;  
 Matches 114; Conservative 0; Mismatches 2; Indels 0; Gaps 0;  
 QY 2 SKEPLPRCPINATLAVKEGCPVCTVTTTICAGYCPMTVRVQGVLPALPOVCNVR 61  
 Db 1 SKEPLPRCPINATLAVKEGCPVCTVTTTICAGYCPMTVRVQGVLPALPOVCNVR 60  
 QY 62 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPITCDPRQ 117  
 Db 61 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPITCDPRQ 116  
 RESULT 159  
 AAR86260  
 ID AAR86260 standard; Protein: 234 AA.  
 AC AAR86260;  
 XX  
 XX 08-MAY-1996 (first entry)  
 XX  
 DE Partially deglycosylated single chain gonadotropin analogue 2a.  
 KW Single chain gonadotropin; human chorionic gonadotropin; hCG;  
 KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;  
 KW inhibit; stimulate; increase; lutropin; lutinising hormone; LH;  
 KW follicle stimulating hormone; FSH; vaccine; contraceptive.  
 XX  
 OS Synthetic.  
 XX  
 XX Key Location/Qualifiers  
 FH Peptide 1..20  
 FT /label- leader

FT Region 21..134  
 FT /label- hCG\_beta\_subunit\_(1-114)  
 FT Misc-difference 33  
 FT /note- "wild-type Asn at position 13 of the beta-  
 FT subunit is pref. replaced by another amino  
 FT acid (esp. Gln) to remove a glycosylation  
 FT site."  
 FT  
 FT Misc-difference 50  
 FT /note- "wild-type Asn at position 10 of the beta-  
 FT subunit is pref. replaced by another amino  
 FT acid (esp. Gln) to remove a glycosylation  
 FT site."  
 FT  
 FT Misc-difference 70  
 FT /note- "Arg corresponds to CCG codon"  
 FT Region 135..142  
 FT /label- linker  
 FT Region 143..234  
 FT /label- Gonadotropin\_alpha\_subunit\_(1-92)  
 FT Misc-difference 13  
 FT /note- "wild-type Asn at position 52 of the alpha-  
 FT subunit is pref. replaced by another amino  
 FT acid (esp. Gln) to remove a glycosylation  
 FT site."  
 FT  
 FT Misc-difference 220  
 FT /note- "wild-type Asn at position 78 of the alpha-  
 FT subunit is pref. replaced by another amino  
 FT acid (esp. Gln) to remove a glycosylation  
 FT site."  
 FT  
 XX MO9522340-A1.  
 XX 24-AUG-1995.  
 XX 17-FEB-1995; 95WO-US02067.  
 XX 18-FEB-1994; 94US-0199382.  
 XX (SENS-) SENS1-TEST.  
 XX Moyle WR;  
 XX WPI; 1995-302553/39.  
 XX  
 XX Methods for altering fertility in mammals, esp. humans - e.g.  
 XX stimulating fertility by reducing the activity and/or levels of  
 XX circulating glyco-protein hormones having lutropin activity  
 XX  
 PS Example 24; Fig 7 and Page 60; 102pp; English.  
 XX  
 CC The single-chain gonadotropin analogue 2a (human CG-beta(1-114)  
 CC [NH3/302]-114) is derived from CG-beta(1-92) [NH3/302]  
 CC from analogue 2b by removing at least one of the four glycosylation  
 CC sites. The partially deglycosylated analogue has anti-luteinising  
 CC hormone (lutropin) activity and can be used for facilitating  
 CC ovulation, terminating pregnancy and reducing androgen secretion.  
 CC The effects of analogue 2a depend upon the time it is administered;  
 CC it will elicit fertility when given early in the menstrual cycle but  
 CC will inhibit fertility when given later.  
 XX  
 SQ Sequence 234 AA;  
 Query Match 80.4%; Score 625; DB 16; Length 234;  
 Best Local Similarity 92.7%; Pred. No. 4.1e-49;  
 Matches 115; Conservative 0; Mismatches 9; Indels 0; Gaps 0;  
 QY 2 SKEPLPRCPINATLAVKEGCPVCTVTTTICAGYCPMTVRVQGVLPALPOVCNVR 61  
 Db 21 SKEPLPRCPINATLAVKEGCPVCTVTTTICAGYCPMTVRVQGVLPALPOVCNVR 80  
 QY 62 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPITCDPRQ 121  
 Db 81 DVRFESIRLPCGPGVNPVSYVALSCQCALCRSTTDCGPKDHPITCDPRQ 140

OY 122 SKAP 125  
DB 141 GSAP 144

RESULT 160  
AAW9528 standard; Protein: 165 AA.  
XX AAW9528;  
XX 08-JUN-1999 (first entry)  
XX Glycoprotein hormone analogue CFC94-117-beta-R6C.Y37C.  
XX Analogue; heterodimeric; glycoprotein hormone; hCG; hLH; hFSH; hTSH;  
XX human chorionic gonadotropin; human luteinising hormone; disulphide bond;  
XX human follicle stimulating hormone; human thyroid stimulating hormone;  
XX stability; primer; amplification; PCR; mutation.  
XX Homo sapiens.  
XX Synthetic.  
XX W09858957-A2.  
XX 30-DEC-1998.  
XX 25-JUN-1998; 98WO-US13070.  
XX 25-JUN-1997; 97US-0050784.  
XX (ISTF) ARS APPLIED RES SYSTEMS HOLDING NV.  
XX (MCIN-) MCINNIS P G.  
XX Moyle WR;  
XX WPI; 1999-081219/07.  
XX New stabilised glycoprotein hormones - particularly hCG, hLH, hFSH  
XX of hFSH, human chorionic gonadotropin, human luteinising hormone, human  
XX alpha- and beta-subunits to improve stability  
XX Example 17; Page 99; 139pp; English.  
XX The invention relates to the production of analogues of a heterodimeric  
XX subunit glycoprotein hormone (GPH) e.g. human chorionic gonadotropin  
XX (hCG), human luteinising hormone (hLH), human follicle stimulating  
XX hormone (hFSH), human thyroid stimulating hormone (hTSH), and functional  
XX mutants, which are modified to contain an intersubunit disulphide bond,  
XX between an alpha-subunit cysteine and a beta-subunit cysteine, for  
XX increased stability. The invention also relates to methods for the  
XX bioactivity for the corresponding heterodimeric GPHs. The invention  
XX represents a chimeric hCG/hFSH-beta subunit in which amino acid residues  
XX 95-103 of the hFSH-beta subunit replace amino acid residues 101-109 of  
XX the hCG-beta subunit. The chimeric protein used for the generation of  
XX the modified GPHs. The improved analogues are designed specifically  
XX to reduce perturbation of the 3-dimensional structure of the hormone,  
XX thereby creating greater likelihood that the dimer will be formed in vivo  
XX and the formed dimer will have affinity for the native receptors and have  
XX agonistic activity on them. The changes stabilise the GPHs and prolong  
XX the biological activities of the hormones. The analogues can have uses  
XX as for the native GPHs.  
XX Sequence 165 AA;  
XX Query Match 80.2%; Score 623; DB 20; Length 165;  
XX Best Local Similarity 85.0%; Pred. No. 4,4e-49;  
XX Matches 119; Conservative 3; Mismatches 18; Indels 0; Gaps 0;  
OY .2 SKEPLPCRCPRINATLAVKEGCPVITVNTTCAGTCPTMTVRVQLGVLPAQVQVNYR 61  
DB 21 SKEPLPCRCPRINATLAVKEGCPVITVNTTCAGTCPTMTVRVQLGVLPAQVQVNYR 80

OY 62 DVRFESIRLPGCPRGVNVVYAVALSOCALCDSSTDDCGPKDBHPTCDPFRDSSS 121  
DB 81 DVRFESIRLPGCPRGVNVVYAVALSOCALCDSSTDDCTVGRGLGSPYCSFGEMKSSS 140  
OY 122 SKAPPSLPSPSLRPGSDT 141  
DB 141 SKAPPSLPSPSLRPGSDT 160

RESULT 161  
AAE04519  
XX AAE04519 standard; Protein: 234 AA.  
XX AAE04519;  
XX 04-SEP-2001 (first entry)  
XX Human single chain gonadotropin analog no:2b.  
XX Human; single chain gonadotropin analog no:2b; anti-infertility; drug;  
XX ESH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;  
XX glycoprotein; infertility; fusion protein; mutant; mutagen.  
XX Homo sapiens.  
XX Synthetic.  
XX Key 21.134  
XX Region  
XX Location/Qualifiers  
XX /note= "Corresponds to 1-114 amino acids of human  
XX chorionic gonadotropin (CG) beta-subunit"  
XX Misc-difference 3  
XX /note= "Wild type Asn substituted with Xaa, Where Xaa  
XX refers to Gln or other amino acid"  
XX Misc-difference 50  
XX /note= "Wild type Asn substituted with Xaa, Where Xaa  
XX refers to Gln or other amino acid"  
XX Misc-difference 98  
XX /note= "Wild type Asn substituted with Xaa, Where Xaa  
XX refers to Gln or other amino acid"  
XX Misc-difference 99  
XX /note= "Wild type Val substituted with Thr"  
XX Region 135-142  
XX /note= "Linker peptide"  
XX Region 143-234  
XX /note= "Corresponds to 1-92 amino acids of human single  
XX chain gonadotropin alpha-subunit"  
XX Misc-difference 194  
XX /note= "Wild type Asn substituted with Xaa, Where Xaa  
XX refers to Gln or other amino acid"  
XX Misc-difference 220  
XX /note= "Wild type Asn substituted with Xaa, Where Xaa  
XX refers to Gln or other amino acid"  
XX US6238890-B1.  
XX 29-MAY-2001.  
XX 25-AUG-1997; 97US-0918288.  
XX 18-FEB-1994; 94US-0199382.  
XX 12-AUG-1994; 94US-0289396.  
XX 02-SEP-1994; 94US-0310590.  
XX 01-NOV-1994; 94US-0311596.  
XX 07-DEC-1994; 94US-0311596.  
XX 07-JUN-1995; 95US-0475049.  
XX 09-MAY-1997; 97US-0853524.  
XX (UNIV ) UNIV WASHINGTON.  
XX Boime I, Moyle WR;  
XX WPI; 2001-366474/38.

XX New DNA or RNA encoding single chain protein useful in treating  
PT infertility, as aids in vitro fertilization techniques, or other  
PT therapeutic methods associated with the native hormones  
XX  
XX Claim 9: Column -; 87pp; English.  
XX  
XX The invention relates to human single chain forms of the glycoprotein  
CC hormone that is an agonist (antagonist) of the luteinizing hormone  
CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone  
CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers  
CC having identical alpha subunits and differing beta subunits. The agonist  
CC forms of single chain hormones are used in treating infertility, as aids  
CC in vitro fertilization techniques, and other therapeutic methods  
CC associated with the native hormones. The single chain hormones are useful  
CC as reagents in a manner similar to heterodimers, as diagnostic tools to  
CC detect the presence of antibodies with respect to the native proteins in  
CC biological samples, as control reagents in assay kits for assessing the  
CC presence of these hormones in various samples, in detecting and purifying  
CC receptors to which these hormones bind, and in the preparation of  
CC are also used in affinity chromatographic preparation of receptors or  
CC antihormone antibodies. They are used as purification tools for  
CC isolation of subsequent preparations of these materials and to monitor  
CC levels of single chain hormones administered as drugs. The single chain  
CC glycoproteins are used to generate antibodies specifically immunoreactive  
CC with these new compounds, as substitutes for the heterodimeric forms of  
CC hormones. The present sequence is human single chain gonadotropin  
CC analog no:2b related to the invention. Analog no:2b is a fusion protein  
CC consisting of human chorionic gonadotropin (CG) beta-subunit (1-114  
CC amino acids) fused to a single chain gonadotropin alpha-subunit  
CC (1-92 amino acids) by a linker sequence. This analog is a useful  
CC starting compound for template directed vaccine design and for the  
CC development of hormone-specific vaccines for use in humans.  
CC Note: The present sequence is not shown in the specification, but is  
CC derived from the human single chain gonadotropin analog no:2 shown  
CC as SEQ ID NO: 6, in figure 6 of the specification (AAE04475).

XX Sequence 234 AA:  
SQ  
Query Match 79.9%; Score 621; DB 22; Length 234;  
Best Local Similarity 91.9%; Pred. No. 9.4e-49;  
Matches 114; Conservative 0; Mismatches 10; Indels 0; Gaps 0;  
OY 2 SKEPLRPRCPINATLAVEKEGCPVCTVTTTICAGYCTPTMTVLQGVLPALPQVVCNVR 61  
DB 21 SKEPLRPRCPINATLAVEKEGCPVCTVTTTICAGYCTPTMTVLQGVLPALPQVVCNVR 80  
OY 62 DVRFESIRLPGCPRGVNVVYVALSCQALCRSTTDCGPKDHPDLPDOPR 121  
DB 81 DVRFESIRLPGCPRGVNVVYVALSCQALCRSTTDCGPKDHPDLPDOPR 140  
OY 122 STAP 125  
DB 141 GSAP 144  
RESULT 162  
AAR15119  
ID AAR15119 standard; Protein: 122 AA.  
XX  
XX AAR15119;  
XX  
XX 11-FEB-1992 (first entry)  
XX  
XX hCG/HLH chimera, A4.  
XX Glycoprotein hormone; immuno-castration;  
KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
KW luteinizing hormone; LH; CG.  
XX Homo sapiens.  
XX  
XX WO9116922-A.  
PN

XX 14-NOV-1991.  
XX  
XX 07-MAY-1991; 91MO-US03162.  
XX  
XX 08-MAY-1990; 90US-0520703.  
XX  
XX (UYNE-) UNIV MED NEW JERSEY.  
XX Campbell RK, Moyle WR;  
XX WPI: 1991-353528/48.  
XX New glyco-protein hormone analogues - for inducing fertility as  
PT immuno-castration agents, for suppressing reproductive system  
PT development and as immuno-contragestive vaccines.  
XX  
XX Table VI: Page 65; 94pp; English.  
XX The sequence is an analogue of mature hCG beta subunit having  
CC residues 99, 113 and 115-122 replaced by the corresponding  
CC residues in the human LH protein and residues 123-145 deleted.  
CC The chimeric hormone may be useful in the treatment of infertility  
CC in men and women and the promotion of fertility in male and female  
CC animals.  
CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
XX  
XX Sequence 122 AA:  
SQ  
Query Match 79.5%; Score 618; DB 12; Length 122;  
Best Local Similarity 98.2%; Pred. No. 9.1e-49;  
Matches 112; Conservative 0; Mismatches 2; Indels 0; Gaps 0;  
OY 2 SKEPLRPRCPINATLAVEKEGCPVCTVTTTICAGYCTPTMTVLQGVLPALPQVVCNVR 61  
DB 1 SKEPLRPRCPINATLAVEKEGCPVCTVTTTICAGYCTPTMTVLQGVLPALPQVVCNVR 60  
OY 62 DVRFESIRLPGCPRGVNVVYVALSCQALCRSTTDCGPKDHPDLPDOPR 115  
DB 61 DVRFESIRLPGCPRGVNVVYVALSCQALCRSTTDCGPKDHPDLPDOPR 114  
RESULT 163  
AAR15095  
ID AAR15095 standard; Protein: 124 AA.  
XX  
XX AAR15095;  
XX  
XX 11-FEB-1992 (first entry)  
XX  
XX hCG/HTSH chimera, C8.  
XX Glycoprotein hormone; fertility; immuno-castration;  
KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
KW thyroid stimulating hormone; TSH; CG.  
XX Homo sapiens.  
XX  
XX WO9116922-A.  
XX  
XX 14-NOV-1991.  
XX  
XX 07-MAY-1991; 91MO-US03162.  
XX  
XX 08-MAY-1990; 90US-0520703.  
XX  
XX (UYNE-) UNIV MED NEW JERSEY.  
XX Campbell RK, Moyle WR;  
XX WPI: 1991-353528/48.  
XX New glyco-protein hormone analogues - for inducing fertility as  
PT immuno-castration agents, for suppressing reproductive system  
PT development and as immuno-contragestive vaccines.  
XX

PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.

XX Table III; Page 62; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 112, 113, and 115-124 replaced by the corresponding  
 CC residues in the hFSH protein and residues 125-145 deleted. The  
 CC chimeric hormone may be useful as a TSH antagonist for the  
 CC treatment of hypothyroidism.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 124 AA;

Query Match 79.5%; Score 618; DB 12; Length 124;  
 Best Local Similarity 98.2%; Pred. No. 9.3e-49;  
 Matches 112; Conservative 0; Mismatches 2; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPRIATLAVKEGCPVCITVNTTICAGTCPTMTVRLQGLPALPQVYCNTR 61

DB 1 SKEPLRPRCPRIATLAVKEGCPVCITVNTTICAGTCPTMTVRLQGLPALPQVYCNTR 60

OY 62 DVFESIRLPGCPGPNVYVYAVALSQCALCRSTTDCGPKDHPDPTCD 115

DB 61 DVFESIRLPGCPGPNVYVYAVALSQCALCRSTTDCGPKDHPDPTCD 114

RESULT 164

ID AAR15161 standard; Protein: 111 AA.

AC AAR15161;

DT 11-FEB-1992 (first entry)

DE hCG deletion mutant, FI.

XX Glycoprotein hormone; immuno-castration;

KW immuno-contragestive; vaccine; human chorionic gonadotropin;

OS Homo sapiens.

PN W09116922-A.

PD 14-NOV-1991.

PF 07-MAY-1991; 91MO-US03162.

PR 08-MAY-1990; 90US-0520703.

XX (UYNE-) ONIV MED NEW JERSEY.

PI Campbell RK, Moyle WR;

DR WPI; 1991-353528/48.

XX New glyco-protein hormone analogues . for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragestive vaccines.

XX Table VII; Page 66; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit having  
 CC residues 112-145 deleted. It was prepd. using PCR mutagenesis to  
 CC insert a stop codon into the gene. It may be useful as an agonist  
 CC for suppressing gonadotrophic activity during chemotherapy.  
 CC See AAR15043, AAR15061-R15125 and AAR15161-R15198.

XX Sequence 111 AA;

Query Match 79.2%; Score 615; DB 12; Length 111;  
 Best Local Similarity 100.0%; Pred. No. 1.5e-48;  
 Matches 111; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPRIATLAVKEGCPVCITVNTTICAGTCPTMTVRLQGLPALPQVYCNTR 61  
 DB 1 SKEPLRPRCPRIATLAVKEGCPVCITVNTTICAGTCPTMTVRLQGLPALPQVYCNTR 60  
 OY 62 DVFESIRLPGCPGPNVYVYAVALSQCALCRSTTDCGPKDHPDPTCD 112  
 DB 61 DVFESIRLPGCPGPNVYVYAVALSQCALCRSTTDCGPKDHPDPTCD 111

RESULT 165

ID AAR86270 standard; Protein: 234 AA.

AC AAR86270;

DT 08-MAY-1996 (first entry)

XX Single chain gonadotropin analogue 2b with extra glycosylation site.

XX Single chain gonadotropin; human chorionic gonadotropin; hCG;

KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;

KW inhibit; stimulate; increase; lutropin; luteinizing hormone; LH;

XX follicle stimulating hormone; FSH; vaccine; contraceptive.

OS Synthetic.

PH Key Location/Qualifiers

FT Peptide 1..20

FT 21..334

FT Region 21..334

FT Misc-difference 33 /label- hCG\_beta\_subunit\_(1-114)

FT /note- "wild-type Asn at position 13 of the beta-subunit is pref. replaced by another amino acid (esp. Gln) to remove a glycosylation site"

FT Misc-difference 50 /note- "wild-type Asn at position 30 of the beta-subunit is pref. replaced by another amino acid (esp. Gln) to remove a glycosylation site"

FT Misc-difference 70 /note- "Arg corresponds to CCG codon"

FT Misc-difference 98 /note- "wild-type Pro at position 78 of the beta-subunit can be replaced by another amino acid to agree with the glycosylation site motif"

FT Misc-difference 99 /note- "wild-type Val at position 79 of the beta-subunit is replaced by Thr to agree with the glycosylation site motif"

FT Region 135..142

FT /label- linker

FT Region 143..234

FT /label- Gonadotropin\_alpha\_subunit\_(1-92)

FT Misc-difference 194 /note- "wild-type Asn at position 52 of the alpha-subunit is pref. replaced by another amino acid (esp. Gln) to remove a glycosylation site"

FT Misc-difference 220 /note- "wild-type Asn at position 78 of the alpha-subunit is pref. replaced by another amino acid (esp. Gln) to remove a glycosylation site"

PN W09522340-A1.

PD 24-AUG-1995.

PP 17-FEB-1995; 95MO-US02067.

XX

PR 18-FEB-1994; 94US-0199382.

XX (SENS-) SENS-TEST.

XX Moyle WR;

XX WPI; 1995-302553/39.

XX Methods for altering fertility in mammals, esp. humans - e.g.

PT stimulating fertility by reducing the activity and/or levels of

PT circulating glyco:protein hormones having lutropin activity

XX Example 25; Fig 7 and Page 60; 102pp; English.

XX The single-chain gonadotropin analogue 2b (human CG-beta(1-114)

CC [N13X,N30X,P78X,V79T]-linker-human CG-alpha(1-92)[N52X,N78X]) is

CC an example of a chimeric glycopeptide hormone having an extra

CC glycosylation site. Addition of oligosaccharides has a positive

CC effect on the ability of the hormone in circulation and can be used to

CC prevent unwanted antibody responses. The chimeric hormone present

CC analogue has anti-luteinizing hormone (lutropin) activity and can

CC be used for facilitating ovulation, terminating pregnancy and

CC reducing androgen secretion.

XX SQ Sequence 234 AA;

Query Match 78.84; Score 612; DB 16; Length 234;

Best Local Similarity 91.14; Pred. No. 6.2e-48;

Matches 113; Conservative 0; Mismatches 11; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCIIVTTICAGVCPTRVTVLQGVLPALPQVVCNR 61

Db 21 SKEPLRPRCPINATLAVEKEGCPVCIIVTTICAGVCPTRVTVLQGVLPALPQVVCNR 80

QY 62 DVRFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGPKDHPITCDPRFQSSS 121

Db 81 DVRFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGPKDHPITCDPRFQSSS 140

QY 122 SKAP 125

Db 141 GSAP 144

XX

XX

XX

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PT New glyco-protein hormone analogues - for inducing fertility as

PT immuno-castration agents, for suppressing reproductive system

PT development and as immuno-contragestive vaccines.

XX Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hFSH beta subunit having

CC several residues replaced by the corresponding residues in the hCG

CC protein. The chimeric hormone is capable of directing hormone

CC treatment to both hFSH receptors and may be useful for the

CC treatment of infertility, reduced androgen secretion and

CC fertility in male and female animals. (See ARI15043, ARI15061-R15125 and

CC ARI15161-R15198).

XX SQ Sequence 115 AA;

Query Match 77.24; Score 600; DB 12; Length 115;

Best Local Similarity 98.24; Pred. No. 3.7e-47;

Matches 109; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCIIVTTICAGVCPTRVTVLQGVLPALPQVVCNR 61

Db 1 SKEPLRPRCPINATLAVEKEGCPVCIIVTTICAGVCPTRVTVLQGVLPALPQVVCNR 60

QY 62 DVRFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGPKDHPITCD 112

Db 61 DVRFESIRLPGCPGVNPNVYAVALSQCACLRSTTDCGPKDHPITCD 111

XX

XX

XX

XX

XX

XX

XX

XX

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	QY	62 DVFESIRLPGCGPNVPVSYAVALSCQCALCRSTTDCGCKPHPLTCDDPR 115                   :
	Db	61 DVFESIRLPGCGPRGVDPVVSFPVALSSRCGKPCRRSTTSGGCKPHPLTCDDHR 114 
 RESULT 169		
ID	AAI15081	standard; Protein: 115 AA.
XX		
CC		
XX	AARI15081:	
DT	11-FEB-1992	(first entry)
DE	hCG/hFSH chimera, B21.	
XX		
KW	Glycoprotein hormone; fertility; immuno-castration;	
KW	immuno-contraestative; vaccine; human chorionic gonadotropin;	
KW	follicle stimulating hormone; FSH; CG;	
OS	Homo sapiens.	
PX	WC91116922-A.	
PN		
PD	14-NOV-1991.	
PF	07-MAY-1991;	91WO-US031162.
PK	08-MAY-1990;	90US-0520703.
PA	(UYNE-) UNIV MED NEW JERSEY.	
PI	Campbell RK, Moyle WR;	
DR	WPI; 1991-353528/48.	
XX		
TT	New glyco-protein hormone analogues - for inducing fertility as	
PT	immuno-castration agents, for suppressing reproductive system	
PT	development and as immuno contraestive vaccines.	
PS	Table II; Page 61; 94pp: English.	
XX		
CC	The sequence is an analogue of mature hCG beta subunit comprising	
CC	residues 1-115 of hCG beta having residues 103-104, and 112-115	
CC	replaced by the corresponding residues in the hFSH protein. The	
CC	chimeric hormone is capable of directing hormone binding to both LH	
CC	and FSH receptors and may be useful for the treatment of infertility	
CC	in men and immunized female animals.	
CC	(See ARI15043, AARI3061-R15125 and AARI15161-R15198).	
SQ	Sequence 115 AA:	
	Query Match                75.4%     Score 586; DB 12: Length 115; Best Local Similarity    96.4%;     Pred.No. 6.9e-46; Matches 107; Conservative   1; Mismatches   3; Indels   0; Gaps   0;	
OY	2 SKELRPPCRPINATLAVERKSGPCIVTWTTCAGCTRTVIGCVLPALPQVCNTR 61 	
Db	1 SKEPLRCPRPINATLAVERKSGPCIVTWTTCAGCTRTVIGCVLPALPQVCNTR 60 	
OY	62 DVFESIRLPGCGPNVPVSYAVALSCQCALCRSTTDCGCKPHPLTCDD 112 	
Db	61 DVFESIRLPGCGPNVPVSYAVALSCQCALCRSTTDCGTGRCHPLTCD 111 	
 RESULT 170		
ID	AAU04609	
XX	AAU04609 standard; Protein: 234 AA.	
AC		
XX	AAU04609;	
DT	23-OCT-2001	(first entry)
XX		

	Query Match	74.9%	Score 582;	DB 22;	Length 234;	
	Best Local Similarity	88.7%	Posed No. 3	3e-47		
	Matches 110;	Conservative	0;	Mismatches 14;	Indels	0;
OY	2	SKEPLPRCPINATLAVEKGGPCVICTVNTTICAGYCPPTTRVLCQVLPALPOVCNVR	51			
Db	21	SKEPLPRCPINATLAVEKGGPCVICTVNTTICAGYCPPTTRVLCQVLPALPOVCNVR	80			
OY	62	DVRFESITLPGCPGVNPVWSYAVALSCQCALCRSTTDCGPKDPIPTCDPDPDSSS	121			
Db	81	DVRFESITLPGCPGVNPVWSYAVALSCQCALCRSTTDCITVRLGSPCYCDPDRSGSGS	140			
OY	122	SKAP	125			



CC detect the presence of antibodies with respect to the native proteins in  
 CC biological samples, as control reagents in assay kits for assessing the  
 CC levels of these hormones in various samples, in detecting and purifying  
 CC receptors to which the native hormones bind. The single chain hormones  
 CC are also used in affinity chromatographic preparation of receptors or  
 CC anti-hormone antibodies. They are used as purification tools for monitor  
 CC and hormone antibodies. Preparation of these materials and to monitor  
 CC levels of single chain hormones and antibodies. The single chain  
 CC glycoproteins are used to generate antibodies specifically immunoreactive  
 CC with these new compounds, as substitutes for the heterodimeric forms of  
 CC hormones. The present sequence is human single chain gonadotropin  
 CC analog no:8 related to the invention. Analog no:8 is a fusion protein  
 CC consisting of human chorionic gonadotropin (CG) beta-subunit (1-100 amino  
 CC acids), follicle stimulating hormone (FSH) beta-subunit (95-103 amino  
 CC acids) and Dppr peptide fused to human single chain gonadotropin alpha-  
 CC subunit (1-92 amino acids) by a linker sequence. This analog serves as a  
 CC useful starting compound for template directed vaccine design and for the  
 CC development of hormone-specific vaccines for use in humans.  
 XX Sequence 234 AA:

Query Match 74.9%; Score 582; DB 22; Length 234;  
 Best Local Similarity 88.7%; Pred. No. 3.3e-45;  
 Matches 110; Conservative 0; Mismatches 14; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMTVRVQLVLPALPQVVCNRY 61  
 DB 21 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMTVRVQLVLPALPQVVCNRY 80  
 OY 62 DVFESIRLPGCPGVNPNVSVYVALSCCALCRSTTDCGGPKDHPDCTCD 121  
 DB 81 DVFESIRLPGCPGVNPNVSVYVALSCCALCRSTTDCGGPKDHPDCTCD 140  
 OY 122 SKAP 125  
 DB 141 GSAP 144

RESULT 172  
 AARI5083  
 ID AARI5083 standard; Protein: 115 AA.  
 AC AARI5083;  
 DT 11-FEB-1992 (first entry)  
 DE hCG/hFSH chimera, B23.  
 KW Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragestive; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG;  
 OS Homo sapiens.  
 PN WO9116922-A.  
 PD 14-NOV-1991.  
 PF 07-MAY-1991; 91WO-US031162.  
 PR 08-MAY-1990; 90US-0520703.  
 PA (UTNE-) UNIV MED NEW JERSEY.  
 PI Campbell RK, Moyle WR;  
 DR WPI; 1991-353528/48.  
 XX New glyco-protein hormone analogues - for inducing fertility as  
 XX immuno-castration agents, for suppressing reproductive system  
 XX development and as immuno-contragestive vaccines.  
 PS Table II; Page 61; 94pp; English.

XX The sequence is an analogue of mature hCG beta subunit comprising  
 CC residues 1-115 of hCG beta having residues 105-107, 109, 110 and  
 CC 112-115 replaced by the corresponding residues in the hFSH protein.  
 CC The chimeric hormone is capable of directing hormone binding to both  
 CC LH and FSH receptors and may be useful for the treatment of infertility  
 CC in men and women and the induction of fertility in female  
 CC animals. (See AARI5043, AARI5061-R15125 and AARI5161-R15198).  
 XX Sequence 115 AA:

Query Match 73.7%; Score 573; DB 12; Length 115;  
 Best Local Similarity 95.5%; Pred. No. 1e-44;  
 Matches 106; Conservative 1; Mismatches 4; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMTVRVQLVLPALPQVVCNRY 61  
 DB 1 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPMTVRVQLVLPALPQVVCNRY 60  
 OY 62 DVFESIRLPGCPGVNPNVSVYVALSCCALCRSTTDCGGPKDHPDCTCD 112  
 DB 61 DVFESIRLPGCPGVNPNVSVYVALSCCALCRSTTDCGGPKDHPDCTCD 111

RESULT 173  
 AARI5083  
 ID AARI5083 standard; Protein: 234 AA.  
 AC AARI5083;  
 DT 29-APR-1996 (first entry)  
 DE Single chain gonadotropin analogue 8.  
 KW Single chain gonadotropin; human chorionic gonadotropin; hCG;  
 KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;  
 KW inhibit; stimulate; increase; lutropin; luteinising hormone; LH;  
 KW follicle stimulating hormone; FSH; vaccine; contraceptive.  
 OS Synthetic.  
 PN Key Location/Qualifiers  
 PE Peptide 1..20  
 FT /label= leader  
 FT Region 21..120  
 FT /label= hCG\_beta\_subunit\_(1-100)  
 FT Misc-difference 70  
 FT /note= \*Arg corresponds to CCG codon\*  
 FT Region 121..129  
 FT /label= hFSH\_beta\_subunit\_(95-103)  
 FT /note= \*Immediately followed by a Cys residue  
 FT (hFSH beta subunit amino acid 104).  
 FT Region 131..134  
 FT /label= DDPK  
 FT Region 135..142  
 FT /label= linker  
 FT Region 143..234  
 FT /label= Gonadotropin\_alpha\_subunit\_(1-92)  
 PN WO9522340-A1.  
 PD 24-AUG-1995.  
 XX 17-FEB-1995; 95WO-US02067.  
 PR 18-FEB-1994; 94US-0199382.  
 PA (SENS-) SENSEI-TEST.  
 PI Moyle WR;  
 DR WPI; 1995-302553/39.  
 DR N-FSDB; AAT03233.

XX Methods for altering fertility in mammals, esp. humans - e.g.  
 PT stimulating fertility by reducing the activity and/or levels of  
 PT circulating glyco:protein hormones having lutropin activity  
 XX  
 XX Example 19 and Claim 39; Fig 13; 102pp; English.  
 XX  
 CC Analogue 8 (hCG-beta(1-100)-hFSH-beta(95-103)-DDEP-linker-human  
 CC alpha(1-92)) is a specific example of a single chain gonadotropin  
 CC having a chorionic gonadotropin (CG) beta subunit at the N-terminus  
 CC and a CG alpha subunit at the C-terminus, joined by a linker of 1-16  
 CC amino acids. The analogue has follicle stimulating hormone  
 CC (folitropin) and luteinising hormone (lutropin) activity but is  
 CC structurally more similar to hCG than to hFSH. The analogue is useful  
 CC for inducing follicle development and increasing male fertility.  
 XX  
 XX Sequence 234 AA:  
 SQ Query Match 73.7%; Score 573; DP 16; Length 234;  
 Best Local Similarity 87.9%; Pred. No. 2.le-44;  
 Matches 109; Conservative 0; Mismatches 15; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCTVTTICAGYCTPTTRVLQGVLPALPOVVCNVR 61  
 DB 21 SKEPLRPRCPINATLAVKEGCPVCTVTTICAGYCTPTTRVLQGVLPALPOVVCNVR 80  
 QY 62 DVRFESIRLPGCPGVNPPVSVAVALSQCACLRSTTDCGGPKDHPHPTC 121  
 DB 81 DVRFESIRLPGCPGVNPPVSVAVALSQCACLRSTTDCGVGLPSYCDPPRGSGGS 140  
 QY 122 SKAP 125  
 DB 141 GSAP 144  
 RESULT 174  
 AAR8922  
 XX AAR31005 standard; protein: 114 AA.  
 XX AAR31005;  
 XX  
 DT 14-MAY-1993 (first entry)  
 XX  
 DE Modified hCG beta-subunit - analogue "Q".  
 XX  
 KW hCG; glycoprotein hormone analogue; human infertility; LH; FSH;  
 KW luteinising hormone receptor; follicle stimulating hormone receptor;  
 KW vertebrate; polycystic ovarian disease.  
 XX  
 OS Homo sapiens.  
 XX  
 FH Key Location/Qualifiers  
 FT Region 94..97 /note= "non-hCG derived residues"  
 FT Region 108..114 /note= "non-hCG derived residues"  
 FT Region 94..97 /note= "D region - LH binding and specificity"  
 FT Region 100..106 /note= "G region - FSH binding and specificity"  
 FT Region 100..106 /note= "G region - FSH binding and specificity"  
 XX  
 PN WO9222568-A.  
 XX  
 XX 23-DEC-1992.  
 XX  
 PF 18-JUN-1992; 92WO-US05207.  
 XX  
 PR 18-JUN-1991; 91US-0717151.  
 XX  
 XX (UYNE-) UNIV NEW JERSEY.  
 XX  
 PI Campbell RK, Moyle WR;  
 XX

DR WPI: 1993-018070/02.  
 XX New alpha, beta-heterodimeric polypeptide derivs. - which bind to  
 PT luteinising and follicle stimulating hormone receptors, useful for  
 PT controlling the ratio of FSH to LH activity  
 XX  
 XX Disclosure; Page 21; 98pp; English.  
 XX  
 CC The sequence is that of a modified form of human chorionic gonadotropin  
 CC (hCG), analogue "Q", in which amino acids in the "D" and/or "G" regions  
 CC have been substituted resulting in changes in the binding specificity  
 CC and avidity of luteinising hormone (LH) and follicle stimulating  
 CC hormone (FSH) receptor. It is used in the prepn. of an alpha,  
 CC beta-heterodimeric polypeptide having an affinity to vertebrate LH  
 CC and FSH receptors. Such an analogue can be prepared having a desired  
 CC ratio of FSH:LH activity. The polypeptide may be used for treating  
 CC human infertility or polycystic ovarian disease.  
 XX  
 XX Sequence 114 AA:  
 SQ Query Match 73.2%; Score 569; DP 14; Length 114;  
 Best Local Similarity 93.8%; Pred. No. 2.4e-44;  
 Matches 103; Conservative 1; Mismatches 6; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCTVTTICAGYCTPTTRVLQGVLPALPOVVCNVR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCTVTTICAGYCTPTTRVLQGVLPALPOVVCNVR 60  
 QY 62 DVRFESIRLPGCPGVNPPVSVAVALSQCACLRSTTDCGGPKDHPHPTC 111  
 DB 61 DVRFESIRLPGCPGVNPPVSVAVALSQCACLRSTTDCGGPKDHPHPTC 110  
 RESULT 175  
 AAR8922  
 ID AAR8922 standard; protein: 114 AA.  
 XX AAR8922;  
 XX  
 DT 13-JUL-1996 (first entry)  
 XX  
 DE HCG analogue-Q beta-subunit.  
 XX  
 KW HCG; human; chorionic gonadotropin; beta-subunit; heterodimer;  
 KW alpha-subunit; LH receptor; FSH receptor; LH; FSH; thyrotropin;  
 KW D-region; G-region; protein engineering; fertility; hormone;  
 KW follicle stimulating hormone; luteinising hormone; TSH;  
 KW ovulation; spermatogenesis.  
 XX  
 OS Homo sapiens.  
 XX  
 FH Key Location/Qualifiers  
 FT Region 1..93 /note= "HCG sequence"  
 FT Region 94..97 /note= "FSH D-region"  
 FT Region 98..107 /note= "HCG G-region fragment"  
 FT Region 108..109 /note= "FSH G-region fragment"  
 FT Region 110..114 /note= "FSH sequence"  
 XX  
 PN US5508261-A.  
 XX  
 XX 16-APR-1996.  
 XX  
 PF 18-JUN-1991; 91US-0717151.  
 XX  
 XX 21-JAN-1994; 94US-0184408.  
 XX 18-JUN-1991; 91US-0717151.  
 XX 18-AUG-1993; 93US-0108845.  
 XX 18-APR-1995; 95US-0425673.

XX PA (UYME-) UNIV NEW JERSEY.

XX PI Campbell RK, Han Y, Macdonald GJ, Moyle WR, Wang Y;

XX XR WPI; 1996-208744/21.

XX PT New alpha, beta-heterodimeric glyco-protein hormone polypeptide(s)

XX PT - having a non-naturally occurring beta subunit derived from HCG,

XX PT LH, FSH and TSH

XX PS Example 1; Column 11-12; 27pp; English.

XX CC The sequence is an example of a glycoprotein hormone beta-chain

XX CC analogue used to construct an alpha,beta-heterodimer polypeptide

XX CC with altered binding affinity to LH receptor and FSH receptor. The

XX CC heterodimer preferably contains an HCG alpha-subunit and a chimeric

XX CC beta-subunit containing HCG, LH, FSH and/or thyrotropin residues.

XX CC The heterodimer may be altered without disrupting the biological

XX CC activity and specificity of the heterodimer. The region of

XX CC heterodimer for LH receptor binding, and the G-region of

XX CC HCG is most important for LH receptor binding, and the G-region of

XX CC most important for FSH binding. Analogue-Q, with an FSH D-region

XX CC and 6 critical residues of the G-region, binds to both FSH receptor

XX CC and LH receptor. A cDNA for analogue-Q may be expressed in a

XX CC COS-7 cell culture. This type of hormone analogue may be useful

XX CC clinically for induction of ovulation in women with polycystic ovary

XX CC disease, or to increase spermatogenesis in azospermic males who have

XX CC some circulating LH.

XX SC Sequence 114 AA;

Query Match 73.24; Score 569; DB 17; Length 114;

Best Local Similarity 93.64; Pred. No. 2.4e-44;

Matches 103; Conservative 1; Mismatches 6; Indels 0; Gaps 0;

QY 2 KEPLRRCRPNATLAVKEGCPVCITVTITTCAGYCPMTVRVLQGVLPALPOVQVYR 61

DB 1 KEPLRRCRPNATLAVKEGCPVCITVTITTCAGYCPMTVRVLQGVLPALPOVQVYR 60

QY 62 DVFESEIRLPGCPGVNYSYVALSCCALCRSTDCGPKDHLTC 111

DB 61 DVFESEIRLPGCPGVNYSYVALSCCALCRSTDCGPKDHLTC 110

RESULT 176

AAE04515

ID AAE04515 standard; Protein; 234 AA.

XX AC AAE04515;

XX DE 04-SEP-2001 (first entry)

XX DE human single chain gonadotropin analog no:8a.

XX KW human; single chain gonadotropin analog no:8a; anti-infertility; drug;

XX KW peptide therapy; luteinising hormone; LH; follicle stimulating hormone;

XX KW FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;

XX KW glycoprotein; infertility; fusion protein; mutant; mutein.

XX OS Homo sapiens.

XX VS Synthetic.

XX FN Key

XX FN Location/Qualifiers

XX FT 21..120

XX FT /note- "Corresponds to 1-100 amino acids of human

XX FT chorionic gonadotropin (CG) beta-subunit"

XX FT Misc-difference 33

XX FT /note- "Wild type Asn substituted with Xaa, Where Xaa

XX FT refers to Gln or other amino acid"

XX FT Misc-difference 50

XX FT /note- "Wild type Asn substituted with Xaa, Where Xaa

XX FT refers to Gln or other amino acid"

XX FT 121..129

XX FT /note- "Corresponds to 95-103 amino acids of human

XX FT follicle stimulating hormone (FSH) beta-subunit"

XX FT 131..134

XX FT /note- "DDPR peptide"

XX FT 135..142

XX FT /note- "Linker peptide"

XX FT 143..224

XX FT /note- "Corresponds to 1-92 amino acids of human single

XX FT chain gonadotropin alpha-subunit"

XX FT Misc-difference 10

XX FT /note- "Wild type Asn substituted with Xaa, Where Xaa

XX FT refers to Gln or other amino acid"

XX FT Misc-difference 220

XX FT /note- "Wild type Asn substituted with Xaa, Where Xaa

XX FT refers to Gln or other amino acid"

XX PN US6238890-B1.

XX XR 29-MAY-2001.

XX XR 25-AUG-1997; 97US-0918288.

XX PR 18-FEB-1994; 94US-0199382.

XX PR 12-AUG-1994; 94US-0289396.

XX PR 22-SEP-1994; 94US-0310590.

XX PR 04-NOV-1994; 94US-0334628.

XX PR 07-DEC-1994; 94US-0351591.

XX PR 07-JUN-1995; 95US-0475049.

XX PR 09-MAY-1997; 97US-0853524.

XX XR (UNITM) UNIV WASHINGTON.

XX PI Boime I, Moyle WR;

XX WPI; 2001-366474/38.

XX DR New DNA or RNA encoding single chain protein useful in treating

XX PT infertility, as aids in vitro fertilization techniques, or other

XX PT therapeutic methods associated with the native hormones

XX XS Claim 9; Column -: 87pp; English.

XX CC The invention relates to human single chain forms of the glycoprotein

XX CC hormone quartet which is an agonist or antagonist of luteinising hormone

XX CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone

XX CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers

XX CC having identical alpha subunits and differing beta subunits. The agonist

XX CC forms of single chain hormones are used in treating infertility, as aids

XX CC in vitro fertilisation techniques, and other therapeutic methods

XX CC associated with the native hormones. The single chain hormones are useful

XX CC as reagents in a manner similar to heterodimers, as diagnostic tools to

XX CC detect presence of antibodies with respect to the native proteins in

XX CC biological samples, as aids in detecting and purifying

XX CC levels of these hormones in various samples, in detecting and purifying

XX CC receptors to which the native hormones bind. The single chain hormones

XX CC are also used in affinity chromatographic preparation of receptors or

XX CC antihormone antibodies. They are used as purification tools for

XX CC isolation of subsequent preparations of these materials and to monitor

XX CC levels of single chain hormones administered as drugs. The single chain

XX CC glycoproteins are used to generate antibodies specifically immunoreactive

XX CC with these new compounds, as substitutes for the heterodimeric forms of

XX CC hormones. The present sequence is human single chain gonadotropin

XX CC analog no:8a related to the invention. Analog no:8a is a fusion protein

XX CC consisting of a single chain gonadotropin (CG) beta-subunit (95-103 amino

XX CC acids) and follicle stimulating hormone (FSH) beta-subunit (95-103 amino

XX CC acids) and DDPR peptide fused to human single chain gonadotropin alpha-

XX CC subunit (1-92 amino acids) by a linker sequence. This analog serves as a

XX CC useful starting compound for template directed vaccine design and for the

XX CC development of hormone-specific vaccines for use in humans.

XX CC Note: The present sequence is not shown in the specification, but is

XX CC derived from the human single chain gonadotropin analog no:8 shown

XX CC as SEQ ID NO: 24, in figure 12 of the specification (AAE04481).

SQ Sequence 234 AA;		SQ Sequence 114 AA;	
Query Match 73.1%; Score 568; DB 22; Length 234;		Query Match 72.2%; Score 561; DB 14; Length 114;	
Best Local Similarity 87.1%; Pred. No. 6.1e-44;		Best Local Similarity 92.1%; Pred. No. 1.3e-43;	
Matches 108; Conservative 0; Mismatches 16; Indels 0; Gaps 0;		Matches 105; Conservative 0; Mismatches 9; Indels 0; Gaps 0;	
QY 2 SKPELRPCRPINATLAVKEGCPVCIYVTTICAGTCPTMTVRVQLQVLPALPQVVCNRR 61		QY 2 SKPELRPCRPINATLAVKEGCPVCIYVTTICAGTCPTMTVRVQLQVLPALPQVVCNRR 61	
DB 21 SKPELRPCRPINATLAVKEGCPVCIYVTTICAGTCPTMTVRVQLQVLPALPQVVCNRR 80		DB 1 SKPELRPCRPINATLAVKEGCPVCIYVTTICAGTCPTMTVRVQLQVLPALPQVVCNRR 60	
QY 62 DYRFESIRLPCCPGVNPVSYVALSCOCALCRSTTDCGGPKDGHLDCCDDPR 121		QY 62 DYRFESIRLPCCPGVNPVSYVALSCOCALCRSTTDCGGPKDGHLDCCDDPR 115	
DB 81 DYRFESIRLPCCPGVNPVSYVALSCOCALCRSTTDCGGPKDGHLDCCDDPR 140		DB 61 DYRFESIRLPCCPGVNPVSYVALSCOCALCRSTTDCGGPKDGHLDCCDDPR 114	
QY 122 SKAP 125			
DB 141 GSAP 144			
RESULT 177		RESULT 178	
AAR31003		AAR88920	
ID AAR31003 standard; protein; 114 AA.		ID AAR88920 standard; protein; 114 AA.	
AC AAR31003;		AC AAR88920;	
DT 14-MAY-1993 (first entry)		DT 12-JUL-1996 (first entry)	
DE Modified HCG beta-subunit - analogue "G".		DE HCG analogue-G beta-subunit.	
XX HCG; glycoprotein hormone analogue; human infertility; LH; FSH;		XX HCG; human; chorionic gonadotropin; beta-subunit; heterodimer;	
XX lutetising hormone receptor; follicle stimulating hormone receptor;		XX alpha-subunit; LH receptor; FSH receptor; LH; FSH; thyrotropin;	
XX vertebrate; polycystic ovarian disease.		XX D-region; G-region; protein engineering; fertility; hormone;	
XX Homo sapiens.		XX ovulation; spermatogenesis.	
XX Key		XX Homo sapiens.	
FT Region	Location/Qualifiers	FT Region	Location/Qualifiers
FT 101..109	/note= "non-HCG derived residues"	FT 1..100	/note= "HCG sequence"
FT 94..97	/note= "D region - LH binding and specificity"	FT 94..100	/note= "HCG D-region"
FT 100..106	/note= "G region - FSH binding and specificity"	FT 95..114	/note= "HCG D-region"
FT W09222568-A.		FT 101..109	/note= "Fragment encoded by oligonucleotide AAT12942"
PD 23-DEC-1992.		FT 110..114	/note= "Human FSH G-region"
PF 18-JUN-1992; 92MO-US05207.		FT /note= "HCG sequence"	
PR 18-JUN-1991; 91US-0717151.		PN US5508261-A.	
XX (UTNE-) UNIV NEW JERSEY.		PD 16-APR-1996.	
PI Campbell RK, Moyle WR;		PF 18-JUN-1991; 91US-0717151.	
DR WPI: 1993-018070/02.		PR 21-JAN-1994; 94US-0184408.	
XX New alpha, beta-hetero: dimeric polypeptide derivs. - which bind to		PR 18-JUN-1991; 91US-0717151.	
PT lutetising and follicle stimulating hormone receptors, useful for		PR 18-AUG-1993; 93US-0108845.	
FS controlling the ratio of FSH to LH activity		XX 18-APR-1995; 95US-0425673.	
XX Disclosure; Page 20; 98pp; English.		PA (UTNE-) UNIV NEW JERSEY.	
XX The sequence is that of a modified form of human chorionic gonadotropin		XX Campbell RK, Han Y, Macdonald GJ, Moyle WR, Wang Y;	
CC (HCG), analogue "G", in which amino acids in the "D" and/or "G" regions		XX WPI: 1996-208744/21.	
CC have been substituted resulting in changes in the binding specificity		XX New alpha, beta-hetero: dimeric glyco:protein hormone polypeptide(s)	
CC available at Genbank (accession number U00001) and the Follicle Stimulating		PT - having a non-natural occurring beta-subunit derived from HCG,	
CC hormone (FSH) receptor. It is used in the treatment of hypogonadism		XX LH, FSH and TSH	
CC beta-heterodimeric polypeptide having an affinity to vertebrate LH		Example 1; Column 11-12; 27pp; English.	
CC and FSH receptors. Such an analogue can be prepared having a desired		XX The sequence is an example of a glycoprotein hormone beta-chain	
CC ratio of FSH:LH activity. The polypeptide may be used for treating		CC analogue used to construct an alpha,beta-heterodimer polypeptide	
CC human infertility or polycystic ovarian disease.		CC with altered binding affinity to LH receptor and FSH receptor. The	
XX heterodimer preferably contains an HCG alpha-subunit and a chimaeric		CC heterodimer containing HCG, LH, FSH and/or thyrotropin residues.	
XX beta-subunit containing HCG, LH, FSH and/or thyrotropin residues.			

CC Binding activity and specificity may be altered without disrupting  
 CC heterodimer formation or reaction with antibodies. The D-region of  
 CC HCG is most important for LH receptor binding, and the G-region is  
 CC most important for FSH binding. Analogue-G, with an HCG D-region  
 CC and an FSH G-region, has high affinity to both LH and FSH  
 CC receptors. A cDNA for analogue-GT (AA88924) is digested with BglII  
 CC and SstI and ligated with oligonucleotide AAT1942, followed by  
 CC expression in Escherichia coli BHS-Alpha and COS-7 cell culture.  
 CC An analogue with low ratio of FSH:FSH activity, which is useful  
 CC clinically for induction of ovulation in women with polycystic  
 CC ovary disease, or to increase spermatogenesis in azospermic males  
 CC who have some circulating LH.  
 XX Sequence 114 AA;

Query Match 72.21; Score 561; DB 17; Length 114;  
 Best Local Similarity 92.11; Pred. No. 1.3e-43;  
 Matches 105; Conservative 0; Mismatches 9; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPMTVRVQLGVLPALPOVVCNTR 61  
 DB 1 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPMTVRVQLGVLPALPOVVCNTR 60  
 QY 62 DVRESIRLPGCPRGVNPVSYAVALSQCACLCRSTTDCGPKDHPITCDPDPSS 115  
 DB 61 DVRESIRLPGCPRGVNPVSYAVALSQCACLCRSTTDCGPKDHPITCDPDPSS 114

## RESULT 179

AA886266  
 ID AAR86266 standard; Protein: 234 AA.

AC AAR86266;

DT 08-MAY-1996 (first entry)

DE Partially deglycosylated single chain gonadotropin analogue 8a.  
 XX Single chain gonadotropin; human chorionic gonadotropin; hCG;  
 XX alpha; beta; subunit; analogue; glycoprotein hormone; fertility;  
 KW inhibit; stimulate; increase; luteinising hormone; LH;  
 KW follicle stimulating hormone; FSH; vaccine; contraceptive.  
 XX Synthetic.

XX Key Location/Qualifiers

FT Peptide 1..20

FT Region 21..120

FT Misc-difference 30

FT /note- "wild-type Asn at position 13 of the beta-  
 subunit is pref. replaced by another amino  
 acid (esp. Gln) to remove a glycosylation  
 site"

FT Misc-difference 50

FT /note- "wild-type Asn at position 30 of the beta-  
 subunit is pref. replaced by another amino  
 acid (esp. Gln) to remove a glycosylation  
 site"

FT Misc-difference 70

FT Region /note- "Arg corresponds to CCG codon"

FT /label- hFSH beta\_subunit\_195-103)

FT /note- "Immediately followed by 2 Cys residue

FT 131..134 (hFSH beta subunit amino acid 104)"

FT Region /label- DDPR

FT Region 135..142

FT Region /label- linker

FT Region 143..234

FT /label- Gonadotropin\_alpha\_subunit\_(1-92)

FT Misc-difference 194

FT /note- "wild-type Asn at position 52 of the alpha-  
 subunit is pref. replaced by another amino  
 acid (esp. Gln) to remove a glycosylation  
 site"

FT Misc-difference 220

FT /note- "wild-type Asn at position 78 of the alpha-  
 subunit is pref. replaced by another amino  
 acid (esp. Gln) to remove a glycosylation  
 site"

PN W09522340-A1.

PD 24-AUG-1995.

XX 17-FEB-1995; 95WO-US02067.

XX 18-FEB-1994; 94US-0199382.

XX (SENS-) SENS1-TEST.

XX Moyle WR;

XX WPI: 1995-302553/39.

XX Methods for altering fertility in mammals, esp. humans - e.g.  
 PT stimulating fertility by reducing the activity and/or levels of  
 PT circulating glyco:protein hormones having lutropin activity

XX Example 24; Fig 13 and Page 60; 102pp; English.

XX The single-chain gonadotropin analogue 8a (hCG-beta(1-100)(N13X,N30X)-  
 CC hFSH-beta(95-103)-DDPR-linker-human CG-alpha(1-92)INS2X,N78X1)  
 CC can be derived from analogue 8 by removing at least one of the four  
 CC glycosylation sites. The partially deglycosylated analogue has anti-  
 CC follicle stimulating hormone (folitropin) and anti-luteinising  
 CC hormone (lutropin) activity and is useful for treating ovarian  
 CC hyperstimulation and reducing spermatogenesis.

XX Sequence 234 AA:

Query Watch 71.91; Score 559; DB 16; Length 234;

Best Local Similarity 86.31; Pred. No. 4e-43;

Matches 107; Conservative 0; Mismatches 17; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPMTVRVQLGVLPALPOVVCNTR 61

DB 21 SKEPLRPRCPINATLAVKEGCPVCITVTITICAGYCPMTVRVQLGVLPALPOVVCNTR 80

QY 62 DVRESIRLPGCPRGVNPVSYAVALSQCACLCRSTTDCGPKDHPITCDPDPSS 121

DB 81 DVRESIRLPGCPRGVNPVSYAVALSQCACLCRSTTDCGPKDHPITCDPDPSS 140

QY 122 SKAP 125

DB 141 GSAP 144

RESULT 180

AA886249

ID AAR86249 standard; Protein: 234 AA.

XX AAR86249;

XX 25-APR-1996 (first entry)

XX Single chain gonadotropin analogue 3.

KW Single chain gonadotropin; human chorionic gonadotropin; hCG;

KW alpha; beta; subunit; analogue; glycoprotein hormone; fertility;

KW inhibit; stimulate; increase; luteinising hormone; LH;

KW follicle stimulating hormone; FSH; vaccine; contraceptive.

XX Synthetic.

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XX FH Key Location/Qualifiers
XX PT Peptide 1..20
XX FT /label= leader
XX FT Region 21..134
XX FT /label= hnh_beta_subunit_(1-114)
XX FT Region 135..142
XX FT /label= linker
XX FT Region 143..234
XX FT /label= Gonadotropin_alpha_subunit_(1-92)
XX PN W0522340-A1.
XX PD 24-AUG-1995.
XX PF 17-FEB-1995; 95WO-US02067.
XX PR 18-FEB-1994; 94US-0199382.
XX RA (SENS-) SENS1-TEST.
XX PA Moyle WR.
XX PI WPI: 1995-302553/39.
XX DR N-PSDB: AAT03221.
XX PT Methods for altering fertility in mammals, esp. humans - e.g.
XX PT stimulating fertility by reducing the activity and/or levels of
XX PT circulating glycoprotein hormones having lutropin activity
XX PS Example 14; Fig 8: 102pp; English.
XX CC Analogue 3 (human LH-beta(1-114)-linker-human-alpha(1-92)) is a
XX CC specific example of a single chain gonadotropin; chimeric proteins
XX CC having a chorionic gonadotropin (CG) beta-subunit at the N-terminus
XX CC and a CG alpha-subunit at the C-terminus, joined by a linker of 1-16
XX CC amino acids are claimed. The analogue has luteinising hormone
XX CC (lutropin) activity and is useful for inducing ovulation and
XX CC increasing male fertility.
XX SQ Sequence 234 AA;

Query Match 71.9%; Score 559; DB 16; Length 234;
Best Local Similarity 81.5%; Pred. No. 4e-43;
Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGYCTPTTRVQLGVLPALPQVYCNTR 61
DB 1 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGYCTPTTRVQLGVLPALPQVYCNTR 61
QY 62 DVRFESIELPCGPGVNPVSYVALSCGALCRSTTDCGPGKHPLTCDPRPDSSS 121
DB 1 DVRFESIELPCGPGVNPVSYVALSCGALCRSTTDCGPGKHPLTCDPRPDSSS 121
QY 122 SKAP 125
DB 141 GSAP 144

RESULT 181
AAU04604
ID AAU04604 standard; Protein: 234 AA.
AC AAU04604;
XX 23-OCT-2001 (first entry)
XX Single chain gonadotropin analogue #3.
XX Ruman; glycoprotein hormone; infertility; in vivo fertilisation;
XX single chain gonadotropin.
XX Homo sapiens.
OS

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XX PN US6242580-B1.
XX PD 05-JUN-2001.
XX PF 31-MAR-1999; 99US-0282357.
XX PR 25-AUG-1997; 97US-0918288.
XX PR 18-FEB-1994; 94US-0199382.
XX PR 22-SEP-1994; 94US-0289596.
XX PR 04-NOV-1994; 94US-0314628.
XX PR 07-DEC-1994; 94US-0351591.
XX PR 07-JUN-1995; 95US-0475049.
XX PR 09-MAY-1997; 97US-0853524.
XX PA (UNIM ) UNIV WASHINGTON.
XX PI Boime I, Moyle WR.
XX DR WPI: 2001-424301/45.
XX DR N-PSDB: AAS08489.
XX PT New single chain forms of the glycoprotein hormone quartet useful for
XX PT generating antibodies specifically immunoreactive with the new
XX PT compounds, in treating infertility, or as aids for in vivo
XX PT fertilization techniques.
XX PS Example 7; Fig 7: 86pp; English.
XX CC The sequence represents the amino acid sequence of single chain
XX CC gonadotropin analogue 3. The glycoprotein hormone analogue is
XX CC useful for generating antibodies specifically immunoreactive with the
XX CC compounds, as a substitute for the heterodimeric forms of the hormones
XX CC in the treatment of infertility, as an aid for in vivo fertilisation
XX CC techniques, and in other therapeutic methods associated with the native
XX CC hormone. The single chain protein is further useful as a reagent in a
XX CC manner similar to the heterodimer, as a diagnostic tool to detect the
XX CC presence of antibodies with respect to the native proteins in the
XX CC biological samples, as a control reagent in assay kits for assessing the
XX CC levels of these hormones, and in various samples, and in detecting and
XX CC purifying these hormones. The single chain protein has the following
XX CC forms of the heterodimers or homodimers have the following advantages
XX CC over their dimeric forms: they are more stable; problems of recombinant
XX CC production are reduced since only a single gene is needed to transcribe,
XX CC translate and process, provide an alternate form thus permitting fine
XX CC tuning of activity levels and of in vivo half lives. Single chain forms
XX CC are unique starting materials for identifying truncated forms with the
XX CC activity of the dimer. The linkage between the subunits permits the
XX CC protein to be engineered without disturbing the overall folding of the
XX CC protein.
XX SQ Sequence 234 AA;

Query Match 71.9%; Score 559; DB 22; Length 234;
Best Local Similarity 81.5%; Pred. No. 4e-43;
Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGYCTPTTRVQLGVLPALPQVYCNTR 61
DB 1 SKEPLRPRCPINATLAVEKGGPCVITVTTCAGYCTPTTRVQLGVLPALPQVYCNTR 61
QY 62 DVRFESIELPCGPGVNPVSYVALSCGALCRSTTDCGPGKHPLTCDPRPDSSS 121
DB 1 DVRFESIELPCGPGVNPVSYVALSCGALCRSTTDCGPGKHPLTCDPRPDSSS 121
QY 122 SKAP 125
DB 141 GSAP 144

RESULT 182
AAU04476

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AAE04476 standard; Protein; 234 AA.  
AAE04476;  
04-SEP-2001 (first entry)  
Human single chain gonadotropin analog no:3.  
Human; single chain gonadotropin analog no:3; anti-infertility; drug;  
peptide therapy; luteinising hormone; LH; follicle stimulating hormone;  
FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;  
glycoprotein; infertility; fusion protein.  
OS Homo sapiens.  
XX Synthetic.  
XX Key  
XX Region  
XX Location/Qualifiers  
XX /note= "Corresponds to 1-114 amino acids of human  
XX luteinising hormone (LH) beta-subunit".  
XX 135..142  
XX Region  
XX /note= "Linker peptide"  
XX 143..234  
XX Region  
XX /note= "Corresponds to 1-92 amino acids of human single  
XX chain gonadotropin alpha-subunit".  
XX US6238890-B1.  
XX 29-MAY-2001.  
XX 25-AUG-1997; 9705-0918288.  
XX 18-FEB-1994; 9405-0199382.  
XX 12-AUG-1994; 9405-0289396.  
XX 22-SEP-1994; 9405-0310590.  
XX 04-NOV-1994; 9405-0334628.  
XX 07-DEC-1994; 9405-031591.  
XX 07-JUN-1995; 9505-0475049.  
XX 09-MAY-1997; 9705-085324.  
XX (UNITW ) UNIV WASHINGTON.  
XX Boime I, Moyle WR;  
XX WPI; 2001-366474/38.  
XX N-PSDB; RAD08789.  
XX New DNA or RNA encoding single chain protein useful in treating  
XX infertility, as aids in vitro fertilization techniques, or other  
XX therapeutic methods associated with the native hormones  
XX  
XX Claim 9; Fig 7; 87pp; English.  
XX The invention relates to human single chain forms of the glycoprotein  
XX hormone quartet which is an agonist or antagonist of luteinising hormone  
XX (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone  
XX (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers  
XX having identical alpha subunits and differing beta subunits. The agonist  
XX forms of single chain hormones are used in treating infertility, as aids  
XX in vitro fertilisation techniques, and other therapeutic methods  
XX associated with the native hormones. The single chain hormones are useful  
XX as reagents in a manner similar to heterodimers, as diagnostic tools to  
XX detect the presence of antibodies with respect to the native proteins in  
XX biological samples, as control reagents in assay kits for assessing the  
XX activity of test samples in various samples, in detecting and purifying  
XX receptors to which affinity chromatographic preparation tools for  
XX are also used in affinity chromatographic preparation tools for  
XX antihormone antibodies. They are used as purification tools for  
XX isolation of subsequent preparations of these materials and to monitor  
XX levels of single chain hormones administered as drugs. The single chain  
XX glycoproteins are used to generate antibodies specifically immunoreactive  
XX with these new compounds, as substitutes for the heterodimeric forms of  
XX hormones. The present sequence is human single chain gonadotropin

CC analog no:3 related to the invention. Analog no:3 is a fusion protein  
CC consisting of human luteinising hormone (LH) beta-subunit (1-114 amino  
CC acids) fused to human single chain gonadotropin alpha-subunit (1-92  
CC amino acids) by a linker sequence. This analog serves as a useful  
CC starting compound for template directed vaccine design and for the  
CC development of hormone-specific vaccines for use in humans.  
XX Sequence 234 AA:  
XX  
XX Query Match 71-9A; Score 559; DB 22; Length 234;  
XX Best Local Similarity 81.5%; Pred. No. 4e-43;  
XX Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;  
XX  
XX 2 SKEPLAPRCRPINATLAVEKRCPCVITVTITICAGTCPTMTVLCVLPALPQVYCNTR 61  
XX 21 SREPLAPWCHPINAIAVEKRCPCVITVTITICAGTCPTMTVLCVLPALPQVYCNTR 80  
XX 62 DVRESIRLPCGPGVWVPSYVALSCQALCRSTTCGGRDHPITCDPRPDSSS 121  
XX 81 DVRESIRLPCGPGVWVPSYVALSCQALCRSTTCGGRDHPITCDPRPDSSS 140  
XX 122 SKAP 125  
XX 141 GSAP 144  
XX  
XX RESULT 183  
XX AAR15107 standard; Protein; 122 AA.  
XX AAR15107;  
XX 11-FEB-1992 (first entry)  
XX hCG/BLH chimera, D11.  
XX Glycoprotein hormone; immuno-castration;  
XX immuno-contragestive; vaccine; human chorionic gonadotropin;  
XX luteinising hormone; LH; CG; bovine.  
XX Homo sapiens.  
XX Bos taurus.  
XX MO9116922-A.  
XX 14-NOV-1991.  
XX 07-MAY-1991; 91WO-US03162.  
XX 08-MAY-1990; 90US-0520703.  
XX (UYNE-) UNIV MED NEW JERSEY.  
XX Campbell RK, Moyle WR;  
XX WPI; 1991-353528/48.  
XX New glyco-protein hormone analogues - for inducing fertility as  
XX immuno-castration agents, for suppressing reproductive system  
XX development and as immuno-contragestive vaccines.  
XX Table IV; Page 63; 94pp; English.  
XX The sequence is an analogue of mature hCG beta subunit having  
XX several residues replaced by the corresponding residues in the  
XX bovine LH protein and having residues 123-143 deleted. The chimeric  
XX protein is useful in inducing fertility and may also have applications as  
XX an immunogen, agonist and/or antagonist.  
XX See AAR15043, AAR15061-R15125 and AAR15161-R15198.  
XX Sequence 122 AA:  
XX

Query Match	71.6%	Score 556.5	DB 12	Length 122
Best Local Similarity	83.6%	Fragment No. 3	Se-43	
Matches 107	Conservative 2	Mismatches 10	Indels 9	Gaps 1
QY	2	SKEPLRPRCPRI <del>N</del> ATLAVKESGCPVCITVNTTICAGYCFPTMRVLQGLPALPQVGCN <del>YR</del> 61		
DB	1	SKEPLRPRCPRI <del>N</del> ATLAVKESGCPVCITVNTTICAGYCFPTMRVLQGLPALPQVGCN <del>YR</del> 60		
QY	62	DVRFSEIRLPGCPRGVNPVSVIAVALSCCALCRNSTDCGPKDHPITCDPDPFOSSS 121		
DB	61	DVRFSEIRLPGCPRGVNPVSVIAVALSCRCGRFLTSDCGPRTQTUADDDR----- 114		
QY	122	SGPPSL 129		
DB	115	---PLPSI 119		
RESULT 184				
QY	AY437279			
DB	AY437279	standard; Protein: 181 AA.		
AC	AA434279;			
CC	19-JAN-2000 (first entry)			
DT	XX	HLH beta subunit-Jun fusion protein sequence.		
DE	XX			
EE	XX	Cysteine knot protein; protein formation; heterodimeric protein analog;		
FF	XX	deglycosylated glycoprotein hormone; fertility; fertility enhancer;		
GG	XX	polycystic ovarian disease; hCG; human; chorionic gonadotropin;		
KW	KW	beta subunit; therapy; Jun.		
OS	XX	Homo sapiens.		
OS	XX	Synthetic.		
OS	XX	WO9553065-A1.		
PD	XX	21-OCT-1999.		
PF	XX	13-APR-1999; 99WO-US08018.		
PR	XX	14-APR-1998; 98US-0059625.		
PR	XX	(OYNE-) UNIV NEW JERSEY.		
PA	XX	Moyle WR.		
XX	XX	WPI; 1999-620431/53.		
DR	XX	Methods for producing heterodimers, particularly analogues of hormones,		
PT	PT	from subunits of cysteine knot proteins .		
XX	XX	Example 4; Fig 17; 73pp; English.		
XX	XX	This sequence represents a fusion protein of the human leutenizing		
XX	XX	hormone (LH) beta subunit and Jun. The invention relates to a		
CC	CC	method of producing a fusion protein comprising attaching a dimerization domain (DD) to either		
CC	CC	the N-terminal of both subunits of the N-terminus of the alpha-subunit and to		
CC	CC	the C-terminal of the beta-subunit and dimerising the products to form		
CC	CC	a heterodimeric protein analog (II). The method is used to produce		
CC	CC	analogues (agonists or antagonists) of deglycosylated glycoprotein		
CC	CC	hormones, potentially useful, e.g. for treating infertility where caused		
CC	CC	by polycystic ovarian disease (associated with excessive levels of		
CC	CC	lutelising hormone). Products that retain DD's are also useful as		
CC	CC	immunogens or antigens (since a DD may containing highly antigenic amino		
CC	CC	acid sequences). Attachment of a DD (which may be removed later)		
CC	CC	allows the fusion protein to be purified by chromatography (e.g. ion exchange		
CC	CC	and thus receptor-binding and immunogenic characteristics) to active dimers,		
CC	CC	and allows the combination of subunits that would otherwise combine		
CC	CC	poorly, or not at all. The N-terminal part of a glycoprotein hormone may		
CC	CC	be modified without loss of activity, and attachment of the DD reduces		
CC	CC	formation of homodimers. Heterodimers have longer circulation times in		



PR 18-FEB-1994; 94US-0199382.  
 PR 12-AUG-1994; 94US-0289396.  
 PR 22-SEP-1994; 94US-0310590.  
 PR 04-NOV-1994; 94US-034528.  
 PR 07-DEC-1994; 94US-035591.  
 PR 07-JUN-1995; 95US-0435049.  
 PR 09-MAY-1997; 97US-0853524.  
 XX (UNIW ) UNIV WASHINGTON.  
 PA Boime I, Moyle WR;  
 PI WPI; 2001-366474/38.  
 DR New DNA or RNA encoding single chain protein useful in treating  
 PT infertility, as aids in vitro fertilization techniques, or other  
 TX therapeutic methods associated with the native hormones -  
 XX Claim 9; Column -; 87pp; English.  
 CC The invention relates to human single chain forms of the glycoprotein  
 CC hormone quartet which is an agonist or antagonist of luteinizing hormone  
 CC (LH), follicle stimulating hormone (FSH), thyroid stimulating hormone  
 CC (TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers  
 CC having identical alpha subunits and differing beta subunits. The agonist  
 CC forms of single chain hormones are used in treating infertility, as aids  
 CC in vitro fertilization techniques, and other therapeutic methods  
 CC associated with the native hormones. The single chain hormones are useful  
 CC with the native hormones to heterodimers, as diagnostic tools to  
 CC detect the presence of antibodies with respect to the hormones in  
 CC biological samples, as control reagents in assay kits for assessing the  
 CC levels of these hormones in various samples, in detecting and purifying  
 CC receptors to which the native hormones bind. The single chain hormones  
 CC are also used in affinity chromatographic preparation of receptors or  
 CC antihormone antibodies. They are used as purification tools for  
 CC isolation of subsequent preparations of these materials and to monitor  
 CC levels of single chain hormones administered as drugs. The single chain  
 CC glycoproteins are used to generate antibodies specifically immunoreactive  
 CC with these hormones as substitutes for the heterodimeric forms of  
 CC hormones. The present sequence is a human analog no:8b is a fusion protein  
 CC analog no:8b related to the invention analog no:8b is a fusion protein  
 CC consisting of human chorionic gonadotropin (CG) beta-subunit (1-100 amino  
 CC acids), follicle stimulating hormone (FSH) beta-subunit (95-103 amino  
 CC subunit (1-92 amino acids) by a linker sequence. This analog serves as a  
 CC useful starting compound for template directed vaccine design and for the  
 CC development of hormone-specific vaccines for use in humans.  
 CC Note: The present sequence is not shown in the specification, but is  
 CC derived from the human single chain gonadotropin analog no:8 shown  
 CC as SEQ ID NO: 24, in figure 12 of the specification (A8E04481).  
 XX Sequence 234 AA;

Query Match 71.4%; Score 555; DB 22; Length 234;  
 Best Local Similarity 85.5%; Pred. No. 9,2e-43;  
 Matches 106; Conservative 0; Mismatches 18; Indels 0; Gaps 0;  
 Oy 2 SKEPLRPRCRINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVYCNVR 61  
 Db 21 SKEPLRPRCRINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVYCNVR 80  
 Qy 62 DYRFESIRLPGCRGVNVTYVALSCGALCRSTDCGGPKDPLTCDDPRFQSSS 121  
 Db 81 DYRFESIRLPGCRGVNVTYVALSCGALCRSTDCGGPKDPLTCDDPRFQSSS 140  
 Qy 122 SKAP 125  
 Db 141 GSAP 144  
 RESULT 186  
 AAY43286  
 ID AAY43286 standard; Protein; 242 AA.

XX AC AAY43286;  
 XX DT 19-JAN-2000 (first entry)  
 XX DE HLH beta subunit-Jun fusion protein sequence.  
 XX KE Cysteine knot protein; protein formation: heterodimeric protein analog;  
 XX KW deacylated glycoprotein hormone; infertility; immunogenic antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;  
 KW beta subunit; therapy; Jun.  
 XX OS Homo sapiens.  
 OS Synthetic.  
 PN W09953065-A1.  
 XX PD 21-OCT-1999.  
 XX PR 13-APR-1999; 99WO-US08018.  
 XX PR 14-APR-1998; 98US-0059625.  
 XX PA (UYNE-) UNIV NEW JERSEY.  
 XX PI Moyle WR;  
 XX DR WPI; 1999-620431/53.  
 XX Methods for producing heterodimers, particularly analogues of hormones,  
 PT from subunits of cysteine knot proteins -  
 XX Example 6; Fig 18; 73pp; English.

XX This sequence is a fusion protein of hLH and Jun. The invention  
 CC relates to a method of forming a cysteine knot protein (I) having alpha  
 CC and beta-subunits comprising attaching a dimerization domain (DD) to  
 CC either the N-termini of both subunits or the C-termini of the  
 CC alpha-subunit and to the C-terminus of the beta-subunit and dimerizing  
 CC the products to form a heterodimeric protein analog (II). The method is  
 CC analogous to the method of forming a heterodimeric protein analog (I).  
 CC glycoprotein hormones, potentially useful for treating infertility  
 CC where caused by polycystic ovarian disease (associated with excessive  
 CC levels of luteinizing hormone). Products that retain DD's are also useful  
 CC as immunogens or antigens (since a DD may contain highly antigenic  
 CC amino acid sequences). Attachment of a DD (which may be removed later)  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC (and thus receptor-binding and immunogenic properties) to native dimers,  
 CC and allows the combination of subunits that would otherwise combine  
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC formation of homodimers. Heterodimers have longer circulation times in  
 CC vivo than individual subunits.  
 XX Sequence 242 AA;  
 Query Match 71.4%; Score 555; DB 20; Length 242;  
 Best Local Similarity 86.8%; Pred. No. 9.5e-43;  
 Matches 99; Conservative 6; Mismatches 9; Indels 0; Gaps 0;  
 Oy 2 SKEPLRPRCRINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVYCNVR 61  
 Db 129 SKEPLRPRCRINATLAVEKEGCPVITVTTICAGYCPMTVRVLOGVLPALPOVYCNVR 188  
 Qy 62 DYRFESIRLPGCRGVNVTYVALSCGALCRSTDCGGPKDPLTCDDPR 115  
 Db 189 DYRFESIRLPGCRGVNVTYVALSCGALCRSTDCGGPKDPLTCDDPR 242  
 RESULT 187  
 AAY43293  
 ID AAY43293 standard; Protein; 242 AA.

AC AAY43293;  
 XX 19-JAN-2000 (first entry)  
 XX HLH beta subunit-Jun fusion protein sequence.  
 XX Cysteine knot protein; protein formation; heterodimeric protein analog;  
 KW deglycosylated glycoprotein hormone; infertility; immunogenic antigen;  
 KW polycystic ovarian disease; hCG; human; chorionic gonadotropin;  
 KW beta subunit; therapy; Jun.  
 XX Homo sapiens.  
 OS Synthetic.  
 XX W09953065-A1.  
 PN 21-OCT-1999.  
 XX 13-APR-1999; 99WO-US08018.  
 XX 14-APR-1998; 98US-0059625.  
 XX (UYNE-) UNIV NEW JERSEY.  
 PA Moyle WR.  
 PI WPI: 1999-620431/53.  
 DR Methods for producing heterodimers, particularly analogues of hormones,  
 KW from subunits of cysteine knot proteins.  
 PT Example 6; Fig 19; 73pp; English.  
 PS This sequence is a fusion protein of HLH and Jun. The invention  
 CC relates to a method of forming a cysteine knot protein (I) having alpha  
 CC and beta-subunits comprising attaching a dimerisation domain (DD) to  
 CC either the N-terminal of both subunits or the N-terminus of the  
 CC alpha-subunit and to the C-terminus of the beta-subunit and dimerising  
 CC the products to form a heterodimeric protein analog (II). The method is  
 CC used to produce analogues (agonists or antagonists) of deglycosylated  
 CC glycoprotein hormones, particularly useful, e.g. for treating infertility  
 CC where caused by low levels of endogenous hormones, e.g. chorionic gonadotropin  
 CC levels of luteinising hormone). Products that retain DD's are also useful  
 CC as immunogens or antigens (since a DD may contain highly antigenic  
 CC amino acid sequences). Attachment of a DD (which may be removed later)  
 CC facilitates the formation of heterodimers, that have similar structures  
 CC (and thus receptor-binding and immunogenic properties) to native dimers,  
 CC and allows the combination of subunits that would otherwise combine  
 CC poorly, or not at all. The N-terminal part of a glycoprotein hormone may  
 CC be modified without loss of activity, and attachment of the DD reduces  
 CC formation of homodimers. Heterodimers have longer circulation times in  
 CC vivo than individual subunits.  
 XX Sequence 242 AA;  
 SQ  
 Query Match 71.44; Score 555; DB 20; Length 242;  
 Best Local Similarity 86.84; Pred. No. 9, 5e-43;  
 Matches 99; Conservative 6; Mismatches 9; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVTTCAGYCPMTTRVLOGVLPALPQVVCNTR 61  
 Db 129 SREPLRPMCHPINALLAVEKEGCPVCTVTTCAGYCPMTTRVLOGVLPALPQVVCNTR 189  
 QY 62 DVRESIRLPCGPGVNPVSVYVALSCGALCRSTTDCGPGKHPLTCDDR 115  
 Db 189 DVRESIRLPCGPGVNPVSVYVALSCGALCRSTTDCGPGKHPLTCDDRQ 242  
 RESULT 188  
 AAR15070  
 ID AAR15070 standard; Protein: 118 AA.  
 AC AAR15070;

XX 11-FEB-1992 (first entry)  
 DT HCG/hFSH chimera, B10.  
 DE Glycoprotein hormone; fertility; immuno-castration;  
 KW immuno-contragative; vaccine; human chorionic gonadotropin;  
 KW follicle stimulating hormone; FSH; CG;  
 XX Homo sapiens.  
 XX W09116922-A.  
 PN 14-NOV-1991.  
 XX 07-MAY-1991; 91WO-US03162.  
 XX 08-MAY-1990; 90US-0520703.  
 XX (UYNE-) UNIV MED NEW JERSEY.  
 XX Campbell RK. Moyle WR.  
 PI WPI: 1991-353528/48.  
 DR New glyco-protein hormone analogues - for inducing fertility as  
 PT immuno-castration agents, for suppressing reproductive system  
 PT development and as immuno-contragative vaccines.  
 XX Table II; Page 61; 94pp; English.  
 CC The sequence is an analogue comprising amino acids 1-118 of mature  
 CC hCG beta subunit having residues 102-107, 109, 110, and 112-118  
 CC replaced by the corresponding residues in the hFSH protein. It was  
 CC prep'd. by site directed mutagenesis of a cDNA sequence encoding the  
 CC hCG beta subunit. The chimera hormone is capable of directing  
 CC hormone binding to both LH and FSH receptors and may be useful for  
 CC the treatment of infertility in men and women and the promotion of  
 CC fertility in male and female animals. (See AAR15043, AAR15051-RL5125  
 CC and AAR15161-RL5196).  
 SQ Sequence 118 AA;  
 Query Match 71.24; Score 553; DB 12; Length 118;  
 Best Local Similarity 92.84; Pred. No. 6, 9e-43;  
 Matches 103; Conservative 2; Mismatches 6; Indels 0; Gaps 0;  
 QY 2 SKEPLRPRCPINATLAVEKEGCPVCTVTTCAGYCPMTTRVLOGVLPALPQVVCNTR 61  
 Db 1 SKEPLRPRCPINATLAVEKEGCPVCTVTTCAGYCPMTTRVLOGVLPALPQVVCNTR 60  
 QY 62 DVRESIRLPCGPGVNPVSVYVALSCGALCRSTTDCGPGKHPLTCDD 112  
 Db 61 DVRESIRLPCGPGVNPVSVYVALSCGALCRSTTDCGPGKHPLTCDD 111  
 RESULT 189  
 AAU04608  
 ID AAU04608 standard; Protein: 234 AA.  
 AC AAU04608;  
 XX 23-OCT-2001 (first entry)  
 XX Single chain gonadotropin analogue #7.  
 KW Human; glycoprotein hormone; infertility; in vivo fertilisation;  
 KW single chain gonadotropin.  
 XX Homo sapiens.  
 XX US6247580-B1.  
 PN

PD	05-JUN-2001.
XX	
XX	31-MAR-1999; 99US-0282357.
XX	
PR	25-AUG-1997; 97US-0918288.
PR	18-FEB-1994; 94US-0193362.
PR	12-SEP-1994; 94US-0289396.
PR	22-SEP-1994; 94US-0310590.
PR	04-NOV-1994; 94US-0334628.
PR	07-DEC-1994; 94US-0351591.
PR	09-JAN-1995; 95US-0475049.
XX	09-MAY-1997; 97US-0853524.
PA	(UNIW ) UNIV WASHINGTON.
XX	
PI	Bolme I, Moyle WR;
XX	
PI	WPI: 2001-42430145.
DR	N-PDSB: AAS08497.
DR	
PA	New single chain forms of the glycoprotein hormone quartet useful for generating antibodies specifically directed against each of the new compounds in treating infertility, or as aids for in vivo fertilisation techniques
PT	
PT	
PT	
XX	Example 11; Fig 11; 86pp: English.
XX	
CC	The sequence represents the amino acid sequence of single chain
CC	antiotropin analogue #1 which is the glycoprotein hormone analogue 19
CC	useful, as a substitute for the heterodimeric form of the hormones,
CC	compounds, as a substitute for the heterodimeric forms of the hormones,
CC	in the treatment of infertility, as an aid for in vivo fertilisation
CC	techniques, and in other therapeutic methods associated with the native
CC	hormone. The single chain protein is further useful as a reagent in a
CC	manner similar to the heterodimer, as a diagnostic tool to detect the
CC	presence of antibodies with respect to the native proteins in the
CC	biological samples, as a control reagent in assay kits for assessing the
CC	effect of various hormones on various samples, and in detecting and
CC	purifying recombinant hormones or homodimers have the following advantages
CC	forms of the heterodimers or homodimers have the following advantages
CC	over their dimeric forms: they are more stable, problems of recombinant
CC	production are reduced since only a single gene is needed to transcribe,
CC	translate and process, provide an alternate form thus permitting fine
CC	tuning of activity levels and of in vivo half lives. Single chain forms
CC	are unique starting materials for identifying truncated forms with the
CC	activity of the dimer. The linkage between the subunits permits the
CC	protein to be engineered without disturbing the overall folding of the
CC	protein.
XX	
XX	Sequence 234 AA:
SQ	
Query Match	71.2%; Score 553; DB 22; Length 234;
Best Local Similarity	85.5%; Pred. No. 1.4e-42;
Matches 106; Conservative	0; Mismatches 18; Indels 0; Gaps 0;
OY	
QY	2 SKEPLRCPRIINTLVKKEGFCVCITVTNTICAGYCFTFRTVRIGGVLPALPQVCNTR 61
DB	21 SKEPLRCPRIINTLVKKEGFCVCITVTNTICAGYCFTFRTVRIGGVLPALPQVCNTR 80
OY	62 DVFRESTRFLPGCGPNVPVSVAVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 121
DB	81 DVFRESTRFLPGCGPNVPVSVAVALSCQCALCRSTTDCGGPKDHLPTCDPFDSSS 140
QY	122 SKAP 125
DB	141 GSAP 144
XX	
RESULT 190	
AAS04480	
ID	AAS04480 standard; Protein: 234 AA.
XX	
AA	AAS044480;

ing  
on.

on.

Gaps 0;  
NYR 61  
||  
TYR 80

SSS 121  
11  
SGS 140

```
y: drug;
```

hormone;  
CG;

man

ere Xaa

an single



Db	21	SEEDLRPCRINATLAVKEGCGPCVITWTTCACGTCGPHTRVVGQVLDPALPQVCNTR	80
Qy	62	DYRFESTILRPGCGPVNPNVSTAVALSOCALCFRRSTTDTGGGPKDPLCTCDPFDSSS	121
Db	81	DYRFESTILRPGCGPVNPNVSTAVALSOCALCFRRSTTDTVSLGPGSYCSFGEMKEGSG	140
Qy	122	S 122	
Db	141	S 141	
RESULT 195			
ID	AAE04479		
XX	AAE04479 standard; Protein; 237 AA.		
XX	AAE04479;		
XX	04-SEP-2001 (first entry)		
XX	Human single chain gonadotropin analog no:6.		
XX	Human: single chain gonadotropin analog no:6; anti-infertility; drug;		
XX	peptide therapy; luteinising hormone; LH; follicle stimulating hormone;		
KW	FSH; thyroid stimulating hormone; TSH; chorionic gonadotropin; CG;		
KW	glycoprotein; infertility; fusion protein.		
XX	Homo sapiens.		
OS	Synthetic.		
XX			
XX	Location/Qualifiers		
FT	21..120		
FT	/note= "Corresponds to 1-100 amino acids of human		
FT	chorionic gonadotropin (CG) beta-subunit"		
FT	121..137		
FT	/note= "Corresponds to 95-111 amino acids of human		
FT	follicle stimulating hormone (FSH) beta-subunit"		
FT	138..146		
FT	146..237 Linker peptide"		
FT	/note= "Corresponds to 1-92 amino acids of human single		
FT	chain gonadotropin alpha-subunit"		
XX	US6238890-B1.		
XX	29-MAY-2001.		
XX	97US-0918288.		
XX	25-AUG-1997;		
XX	94US-0193382.		
XX	94US-0289396.		
XX	94US-0310590.		
XX	94US-0334628.		
XX	94US-0351591.		
XX	95US-0475049.		
XX	97US-0853524.		
XX	(UNIV ) UNIV WASHINGTON.		
XX	Bolme I. Moyle WR;		
XX	WPI: 2001-366474/38.		
XX	N-PSDB: AAD08795.		
XX	New DNA or RNA encoding single chain protein useful in treating		
XX	infertility, as aids in vitro fertilization techniques, or other		
XX	therapeutic methods associated with the native hormones		
XX	Claim 9; Fig 10; 87pp; English.		
XX	The invention relates to human single chain forms of the glycoprotein		
XX	hormone quartet which is an agonist or antagonist of luteinising hormone		
XX	(LH), follicle stimulating hormone (FSH), thyroid stimulating hormone		
XX	(TSH) or chorionic gonadotropin (CG). All these hormones are heterodimers		

CC having identical alpha subunits and differing beta subunits. The agonist  
 CC forms of single chain hormones are used in treating infertility, as aids  
 CC in vitro fertilisation techniques, and other therapeutic methods  
 CC associated with the native hormones. The single chain hormones are useful  
 CC as reagents in a manner similar to heterodimers, as diagnostic tools to  
 CC detect the presence of antibodies with respect to the native proteins in  
 CC biological samples, as control reagents in assay kits for assessing the  
 CC reversibility of these hormones. In various samples, in detecting and purifying  
 CC these hormones, the single chain hormones are used as reagents or  
 CC are also used in affinity chromatography, propagation tools for  
 CC antihormone antibodies. They are used as purification tools for  
 CC isolation of subsequent preparations of these materials and to monitor  
 CC levels of single chain hormones administered as drugs. The single chain  
 CC glycoproteins are used to generate antibodies specifically immunoreactive  
 CC with these new compounds, as substitutes for the heterodimeric forms of  
 CC hormones. The present DNA sequence is human single chain gonadotropin  
 CC analog no:6 coding sequence related to the invention. Analog no:6 is a  
 CC subunit (1-100) consisting of human chorionic gonadotropin (CG) beta-  
 CC subunit (1-100) fused to human single chain gonadotropin  
 CC subunit (95-111 amino acids) by a linker sequence. This analog serves  
 CC as a useful starting compound for template directed vaccine design and  
 CC for the development of hormone-specific vaccines for use in humans.  
 XX

50 Sequence 237 AA;

Query Match 70.7%; Score 549; DB 22; Length 237;  
 Best Local Similarity 86.0%; Pred. No. 3,36-42;  
 Matches 104; Conservative 2; Mismatches 15; Indels 0; Gaps 0;

OY 2 SKEPLRPRCRPINATLAVKEGCPWCITVNTTICAGYCPMTVRVLOGVLPALPOVVCNVR 61  
 DB 21 SKEPLRPRCRPINATLAVKEGCPWCITVNTTICAGYCPMTVRVLOGVLPALPOVVCNVR 80  
 OY 62 DVRFESIRLPGCPGVNPNVSTAVSLSCCALCRSTTDCGGPHLTCDDRFQSSS 121  
 DB 81 DVRFESIRLPGCPGVNPNVSTAVSLSCCALCRSTTDCVTGRLGSPSCFSGEMKGSG 140  
 OY 122 S 122  
 DB 141 S 141

RESULT 196  
 AAR86276  
 ID AAR86276 standard; Protein: 234 AA.

XX AAR86276;  
 DT 13-MAY-1996 (first entry)  
 DE Single chain gonadotropin analogue 8b with extra glycosylation site.  
 KW Single chain gonadotropin; human chorionic gonadotropin; hCG;  
 KW alpha; beta; subunit; analogue; glykoprotein hormone; fertility;  
 KW inhibit; stimulate; increase; lutropin; lutinising hormone; LH;  
 KW follicle stimulating hormone; FSH; vaccine; contraceptive.  
 XX Synthetic.

XX Key Location/Qualifiers  
 XX Peptide 1..20 - Leader  
 XX Region 21..120  
 FT /label= hcg\_beta\_subunit\_(1-100)

FT Misc-difference 33 /note= "wild-type Asn at position 13 of the beta-  
 FT subunit is pref. replaced by another amino  
 FT acid (esp. Gln) to remove a glycosylation  
 FT site"  
 FT Misc-difference 50 /note= "wild-type Asn at position 30 of the beta-  
 FT subunit is pref. replaced by another amino

FT acid (esp. Gln) to remove a glycosylation  
 FT site"  
 FT Misc-difference 70 /note= "Arg corresponds to CCG codon"  
 FT Misc-difference 99 /note= "wild-type Pro at position 78 of the beta-  
 FT subunit is replaced by another amino acid  
 FT to agree with the glycosylation site motif."  
 FT Misc-difference 99 /note= "wild-type Val at position 79 of the beta-  
 FT subunit is replaced by Thr to agree with the  
 FT glycosylation site motif"  
 FT Region 121..129  
 FT /label= hFSH\_beta\_subunit\_(95-103)  
 FT /note= "Immediately followed by a Cys residue  
 FT (hFSH beta subunit amino acid 104)."  
 FT Region 131..134  
 FT /label= DPPR  
 FT Region 143..234  
 FT /label= linker  
 FT Misc-difference 194 /label= Gonadotropin\_alpha\_subunit\_(1-92)  
 FT /note= "wild-type Asn at position 52 of the alpha-  
 FT subunit is pref. replaced by another amino  
 FT acid (esp. Gln) to remove a glycosylation  
 FT site"  
 FT Misc-difference 220 /note= "wild-type Asn at position 78 of the alpha-  
 FT subunit is pref. replaced by another amino  
 FT acid (esp. Gln) to remove a glycosylation  
 FT site"  
 XX MO9522340-A1.  
 XX 24-AUG-1995.  
 XX 17-FEB-1995; 95WO-US02067.  
 XX 18-FEB-1994; 94US-0199382.  
 XX (SENS-) SENSIT-TEST.  
 XX Moyle WR;  
 XX WFI; 1995-302553/39.  
 XX Methods for altering fertility in mammals, esp. humans - e.g.  
 XX stimulating fertility by reducing the activity and/or levels of  
 XX circulating glyco:protein hormones having lutropin activity  
 XX Example 25; Fig 13 and Page 60; 102pp; English.  
 XX The single-chain gonadotropin analogue 8b (human CG-beta(1-100)  
 CC (N13X,N30X,P78X,V79T)-hFSH-beta(95-103)-DPPR-linker-human CG-alpha  
 CC (1-92)(N52X,N78X)) is an example of a chimeric glycopeptide hormone  
 CC having an extra glycosylation site. Addition of oligosaccharides has  
 CC a positive effect on stability of hormones in circulation and can be  
 CC used to prevent unwanted antibody or receptor interactions. The  
 CC present analogue has anti-follicle stimulating hormone (folliotropin)  
 CC and anti-luteinising hormone (lutropin) activity and is useful for  
 CC treating ovarian hyperstimulation and reducing spermatogenesis.

Sequence 234 AA;

Query Match 70.3%; Score 546; DB 16; Length 234;  
 Best Local Similarity 84.7%; Pred. No. 66-42;  
 Matches 105; Conservative 0; Mismatches 19; Indels 0; Gaps 0;

OY 2 SKEPLRPRCRPINATLAVKEGCPWCITVNTTICAGYCPMTVRVLOGVLPALPOVVCNVR 61  
 DB 21 SKEPLRPRCRPINATLAVKEGCPWCITVNTTICAGYCPMTVRVLOGVLPALPOVVCNVR 80

QY 62 DYRFESIRLPGCGPGVNVYSAVALSCOCALCRSTTDCGPKDHPDLCDDPRGSGS 121  
 DB 81 DYRFESIRLPGCGPGVNVYSAVALSCOCALCRSTTDCGPKDHPDLCDDPRGSGS 140  
 QY 122 SKAP 125  
 DB 141 GSAP 144  
 RESULT 197  
 AAY29594  
 ID AAY29594 standard; protein; 122 AA.  
 XX  
 AC AAY29594;  
 DT 15-OCT-1999 (first entry)  
 XX Human luteinising hormone beta fragment.  
 XX Human: luteinising hormone; beta core fragment; hLH; menopause;  
 KW urine; antibody; hLH-beta cf.  
 XX Homo sapiens.  
 OS  
 PN W09939202-AL.  
 XX 05-AUG-1999.  
 PD  
 PF 03-FEB-1999; 99NO-US02279.  
 XX 03-FEB-1998; 98US-0018122.  
 PR  
 XX (UYCO ) UNIV COLUMBIA NEW YORK.  
 XX Birken S, Kovalevskaya GI, Maydelman Y, O'Connor JF;  
 PI WPI: 1999-494116/41.  
 XX Determination of human luteinising hormone beta core fragment in  
 PT urine samples, useful for predicting onset of menopause  
 XX Example 1; Page 162; 165pp; English.  
 XX A method has been developed for predicting the likely timing of the  
 CC onset of menopause for a perimenopausal female. The method comprises  
 CC determining the amount of human luteinising hormone beta core fragment  
 CC (hLH-beta cf) in a sample from the subject by: (a) contacting a sample  
 CC with an antibody (Ab), which specifically binds to hLH-beta cf without  
 CC conditionally cross-reacting with hLH, hLH-beta or hCG-beta cf, under  
 CC conditions that permit the formation of a complex between the Ab and  
 CC hLH-beta cf; (b) measuring the amount of complex between the Ab and  
 CC hLH-beta cf; (c) comparing the amount of hLH-beta cf in the sample; and (d) comparing the  
 CC amount of hLH-beta cf in the subjects sample determined in step (b) with  
 CC the amount determined for a known postmenopausal or premenopausal female  
 CC subject; where an amount of hLH-beta cf in the sample is of a similar  
 CC level in the known postmenopausal female subject sample and indicates  
 CC temporal proximity to the onset of menopause, and an amount of  
 CC hLH-beta cf in the sample similar to the level in the known premenopausal  
 CC female sample indicates a temporal distance from the onset of menopause.  
 CC An hLH-beta cf has been isolated from human pituitaries and a panel of  
 CC monoclonal antibodies has been generated. They can be used to  
 CC characterise hLH-beta expression in the urine of both reproductive and  
 CC post-reproductive age women. The antibodies are used for a number of  
 CC purposes including: (a) predicting the onset of menopause; (b) assessing the  
 CC perimenopausal female, assessing ovarian function and to determine the  
 CC efficacy of hormone replacement therapy in a perimenopausal female. The  
 CC present sequence represents an hLH-beta fragment used in the  
 CC exemplification of the present invention.  
 XX  
 SQ Sequence 122 AA;  
 Query Match 70.1%; Score 545; DB 20; Length 122;  
 Best Local Similarity 84.5%; Pred. No. 3.8e-42;

Matches 98; Conservative 6; Mismatches 12; Indels 0; Gaps 0;  
 QY 2 SKPELRPCRPINATLAVEKGGPCVCTVNTTICAGTCPTATRVQLGVLPALPOVYCNVR 61  
 DB 1 SREPLRPMCHPINAIALAVEKGGPCVCTVNTTICAGTCPTATRVQLGVLPALPOVYCNVR 60  
 QY 62 DYRFESIRLPGCGPGVNVYSAVALSCOCALCRSTTDCGPKDHPDLCDDPRGQ 117  
 DB 61 DYRFESIRLPGCGPGVNVYSAVALSCOCALCRSTTDCGPKDHPDLCDDPRGQ 116  
 RESULT 198  
 AAU04622  
 ID AAU04622 standard; protein; 114 AA.  
 XX  
 AC AAU04622;  
 DT 23-OCT-2001 (first entry)  
 XX Human luteinising hormone beta subunit, amino acids 1-114.  
 XX Human: chorionic gonadotropin; hCG; glycoprotein hormone; infertility;  
 KW luteinising hormone; LH; follicle stimulating hormone; FSH;  
 KW thyroid stimulating hormone; TH.  
 XX Homo sapiens.  
 OS  
 PN US6242580-B1.  
 XX 05-JUN-2001.  
 PD  
 PF 31-MAR-1999; 99US-0282357.  
 XX 25-AUG-1997; 97US-0918288.  
 PR 18-FEB-1994; 94US-0199382.  
 PR 12-AUG-1994; 94US-0289396.  
 PR 22-SEP-1994; 94US-0310590.  
 PR 04-NOV-1994; 94US-0334628.  
 PR 07-OCT-1995; 95US-0325193.  
 PR 07-JUN-1995; 95US-0325193.  
 PR 09-MAY-1997; 97US-083324.  
 XX (UNIV ) UNIV WASHINGTON.  
 PA  
 XX Bolme I, Moyle WR;  
 PI WPI: 2001-424301/45.  
 XX New single chain forms of the glycoprotein hormone quartet useful for  
 CC generating antibodies specifically immunoreactive with the new  
 CC compounds in treating infertility, or as aids for in vivo  
 CC fertilisation techniques.  
 XX Example 19; Column 35; 86pp; English.  
 PS The sequence represents the amino acid sequence of human luteinising  
 CC hormone beta subunit, amino acids 1-114. The protein is an  
 CC important glycoprotein hormone heterodimer, along with chorionic gonad-  
 CCotropin (hCG), follicle stimulating hormone (FSH), thyroid stimulating  
 CC hormone (TH), which all have identical alpha subunits but differing beta  
 CC subunits. The proteins are useful for generating antibodies specifically  
 CC immunoreactive with new compounds, as substitutes for the  
 CC heterodimeric forms of the hormones, in the treatment of infertility, as  
 CC aids for in vivo fertilisation techniques, and for other therapeutic  
 CC applications associated with the pathogenesis. The alpha chains  
 CC are further useful as reagents in a manner similar to the heterodimers,  
 CC as diagnostic tools to detect the presence of antibodies with respect to  
 CC the native proteins in the biological samples, as control reagents in  
 CC assay kits for assessing the levels of these hormones in various samples,  
 CC and in detecting and purifying receptors to which the native hormones  
 CC bind. The single chain forms of the heterodimers or homodimers have the  
 CC following advantages over their dimeric forms: they are more stable,  
 CC problems of recombinant production are reduced since only a single gene



is needed to transcribe, translate and process, provide an alternate form permitting fine tuning of activity levels and of *in vivo* half lives. Single chain proteins with the same catalytic mechanism can identify truncated forms with the activity of the full length protein. These subunits fold the protein to be engineered without disturbing the overall folding of the protein.

XX	Sequence	114 AA:	70.08:	Score 544:	DP 22:	Length 114:	0:
XX	Query Match	Best Local Similarity	85.19:	Pred. No. 4.4e-2:			
XX	Matches 97:	Conservative	6:	Mismatches 11:	Indels	Gaps	0:
QY	2	SKPELRPRCPINATLAVEKGGPCVICTIVTTICAGYCPTRVRLQGVLPALPQVNCNR	61				
QY	1	SKPELRPRCPINATLAVEKGGPCVICTIVTTICAGYCPTRVRLQGVLPALPQVNCNR	61				
DD	1	SREPLRWCPINATLAVEKGGPCVICTIVTTICAGYCPTRVRLQGVLPALPQVNCNR	60				
QY	62	DVRFSTRLPGCGRGVDVPSFVALSCRGPCRRSTISDGGCKPHDPLTCDHPQ	114				
DD	61	DVRFSTRLPGCGRGVDVPSFVALSCRGPCRRSTISDGGCKPHDPLTCDHPQ	114				

RESULT 199	
AA92001	AA92001 standard; Protein; 121 AA.
XX	
AC	AA92001;
XX	
DT	19-JUL-2000 (first entry)
XX	
DE	Human luteinizing hormone beta subunit.
XX	
DE	human luteinizing hormone; beta subunit; CKGF; mutant;
XX	Cytidine fast growth factor; human loop; thyroid stimulating hormone;
KW	TSH; hypothyroidism; thyroid cancer.
KX	
OS	Homo sapiens.

XX		Location/Qualifiers
PH	8..33	/label= beta_hairpin_loop_1
FT		
FT		Misc-difference 1..33
FT		/note= "mutant optionally comprises one or more
FT		substitutions in these residues, preferably
FT		a basic residue"
FT		

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FT      58..87
Domain  /label= beta_hairpin_loop_3
XX      WO200017360-A1.
XX      30-MAR-2000.
PD      XX
XX      19-MAR-1999; 99WO-US05908.
XX      22-SEP-1998; 98WO-US19772.
XX      (UYMA-) UNIV MARYLAND BALTIMORE.
XX      Weintraub BD, Szekudlinski MW;
XX      WPI; 2000-283585/24.
DR

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XX New mutant cysteine knot growth factor proteins comprising one or more  
XX mutant subunits having improved properties of preventing diseases e.g.  
XX mutant subunits having improved properties of preventing diseases e.g.  
XX hypothyroidism and thyroid cancer  
XX  
XX Claim 73: Page 297: 320pp: English.  
XX This is the wild type human luteinizing hormone beta subunit. Mutants  
XX comprise at least one electrostatic charge altering mutation in a beta  
XX hairpin loop, resulting in increased bioactivity.  
XX mutant cysteine knot growth factor (CKGF) proteins comprising one or more  
XX mutant subunits and having novel properties or improved pharmacological  
XX properties.

properties compared to wild type CKGRs are claimed. The CKGR family comprises at least two subfamilies. In the first, the glycoprotein hormones and the platelet-derived growth factor (PDGF) family, the neurotrophins and the transforming growth factor- $\beta$  family; the families are known to be structurally similar (especially comprising the cysteine knot topology) and it was shown that mutations at certain positions in the CKGR halpin loops of family members and other members of the CKGR superfamily could significantly alter the biological activities of the CKGR.

A mutant thyroid stimulating hormone (TSH) heterodimer or analogue (they are also referred to as thyroid stimulating hormone receptor activating hormone (TRAH)) is also useful to treat or diagnose thyroid disease by administering the mutant heterodimer or analogue to stimulate iodine uptake, and subsequently administering radiolabeled iodine to treat the cancer or enable radiolabel detection (claimed).

```

xx  SQ      Sequence      121 AA:
Query Match      70.0%      Score 544; DB 21; Length 121;
Best Local Similarity 85.1%      Pred. NO. 4.7e-42;
Matches 97; Conservative 11; Mismatches 11; Indels 0; Gaps 0;

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QY	2	SKEPLRPRCPRIATLAVESGSPVCITVNTTTCAGTCPTMRVZGVLPALPOVYCNTR	61
DB	1	SREPLRPNCPRIATLAVESGSPVCITVNTTTCAGTCPTMRVZGVLPALPOVYCNTR	60
QY	62	OVAFESIRLPGCPGVNWSVAVALSCCALCRSTTTCGCGKDXHLPTCCDPR	115
DB	61	OVAFESIRLPGCPGVNWSVAVALSCGCGCRSTTTCGCGKDXHLPTCCDPR	114

RESULT 200	
AA60602	
ID	AAP60602 standard; Protein; 141 AA.
XX	
XX	AAP60602;
XX	
DT	01-JUL-1991 (first entry)
DE	
XX	Sequence of human beta lutelinising hormone (LH).
XX	Contractive; fertility control; vaccine; reproductive hormone.
OS	Homo sapiens.

	Key	Location/Qualifiers
FX	Peptide	1..5
FT	Protein	1..140
FN	HQ6807393-A.	
PN		
PD	18-DEC-1986.	
PX		
PE	04-JUN-1986;	86MO-US01226.
PR	18-JUL-1985;	85US-0756847.
PP	04-JUN-1985;	85US-0741168.
XX	(BIOT-) BIOTECHN RES PARTN.	
XA	Talmadge RD,	Fiddes JC;
PI		
DR	WPI: 1986-346608/52.	
NF	N-PSDB: AAN60524.	

XX Auto-antigen vaccines conferring antigenicity using multimers  
PT etc. - useful as species specific or cross-species effective,  
PT esp. for controlling fertility in mammals  
XX  
PS Example; Fig 4; 101pp; English.

CC The patentors claim a vaccine effective against mammalian fertility comprising a vaccinia virus genome having disposed unit, in a non-

CC essential region, a DNA sequence of formula : (Hormone)n; n= 1-20;  
CC Hormone= DNA sequence derived from the sequence encoding a  
CC reproductive hormone. The hormone is esp. LH, GnRH, CG or FSH.

XX  
SQ Sequence 141 AA:

Query Match 70.0%; Score 544; DB 7; Length 141;  
Seq. Local Similarity 85.1%; Pred. No. 5.4e-42;  
Matches 97; Conservative 6; Mismatches 11; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVEKEGCEPCITVNTTICAGYCTPTNTRVLQGLPALPOVVCYR 61  
Db 21 SREPLRPRCPINATLAVEKEGCEPCITVNTTICAGYCTPTNTRVLQGLPALPOVVCYR 80  
QY 62 DYRFESIRLPCCPRGVPVYVAYALSCCALCRSTTDCGGPKDRHPLTCDPR 115  
Db 81 DYRFESIRLPCCPRGVPVYVAYALSCCALCRSTTDCGGPKDRHPLTCDPR 134

Search completed: October 11, 2002, 17:57:49  
Job time : 39 secs

GenCore version 5.1.3  
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OM protein - protein search, using sw model

Run on: October 11, 2002, 17:57:02 : Search time 14.5 seconds  
(without alignments)  
246,001 Million cell updates/sec

Title: US-09-813-398-3

Perfect score: 777

Sequence: 1 PSKEPLRGRINATIAVE.....SKAPPSLPSPRLQPSDT 141

Scoring table: BLOSUM62

Gapop 10.0, Gapext 0.5

Searched: 231628 seqs, 24425594 residues

Total number of hits satisfying chosen parameters: 231628

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 350 summaries

Database : Issued Patents AA:

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2: /cgn2\_6/ptodata/1/laa/3B.CONB.pap.\*

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6: /cgn2\_6/ptodata/1/laa/backfiles1.pap.\*

Pred. No. is the number of results predicted by chance to have a  
score greater than or equal to the score of the result being printed,  
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	770	99.1	145	1	US-08-475-213-10
2	770	99.1	145	2	US-08-395-238-2
3	770	99.1	145	3	US-09-142-320-12
4	770	99.1	145	4	US-09-142-320-13
5	770	99.1	145	5	US-09-142-320-14
6	770	99.1	145	6	US-09-142-320-15
7	770	99.1	145	7	US-08-918-288-68
8	770	99.1	145	8	US-09-282-357-68
9	770	99.1	265	1	US-08-918-288-3
10	770	99.1	265	4	US-08-918-288-39
11	770	99.1	265	4	US-09-282-357-3
12	770	99.1	265	4	US-09-282-357-39
13	767	98.7	165	2	US-08-709-924-2
14	767	98.7	165	2	US-08-709-925-2
15	767	98.7	165	4	US-08-709-948-2
16	764	98.3	145	1	US-08-425-673-2
17	764	98.3	145	1	US-08-425-673-6
18	764	98.3	181	4	US-08-918-288-36
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Sequence 2, Appl	180	71	9.1	14	4	US-08-709-948-12
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Patent No. 5451527	182	71	9.1	368	3	US-08-454-259-3
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Sequence 7, Appl	221	67.5	8.7	1252	2	US-08-623-5015-68
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Sequence 113, App	235	66	8.5	11	5	PCI-US94-07644A-43
Sequence 125, App	236	66	8.5	91	4	US-09-235-451-45
Sequence 18, App	237	66	8.5	413	1	US-08-700-749A-1
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REFERENCE/DOCKET NUMBER: 0240.002  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 510-601-2706  
TELEFAX: 510-655-3542  
INFORMATION FOR SEQ ID NO: 10:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 145 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: peptide  
US-08-475-213-10

Query Match 99.1%; Score 770; DB 1; Length 145;  
Best Local Similarity 100.0%; Pred. No. 1.3e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQWVYNR 61  
DB 1 SKEPLRPRCPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQWVYNR 60  
QY 62 DVFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGGPKDHPHPLTCDPRFQDSSS 121  
DB 61 DVFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGGPKDHPHPLTCDPRFQDSSS 120  
QY 122 SKAPPSLPSPSRLPSPSDT 141  
DB 121 SKAPPSLPSPSRLPSPSDT 140

RESULT 2  
US-08-395-238-2  
Sequence 2, Application US/08395238  
Patent No. 5864488  
GENERAL INFORMATION:  
APPLICANT: ISSACS, Neil William  
APPLICANT: LAPHORN, Adrian Jonathan  
APPLICANT: HARRIS, Deborah Claire  
ATTORNEY/AGENT INFORMATION:  
NUMBER OF SEQUENCES: THREE DIMENSIONAL HORMONE STRUCTURE  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: AKZO NOBEL PATENT DEPARTMENT  
STREET: 1300 PICCARD DRIVE, SUITE 206  
CITY: ROCKVILLE  
STATE: MARYLAND  
COUNTRY: UNITED STATES  
ZIP: 20850  
COMPUTER READABLE FORM:  
MEDIA: 3.5 INCH DISKETTE  
COMPUTER: IBM PC COMPATIBLE  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/395,238  
FILING DATE: 24-FEB-1995  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: GB 9403600.1  
FILING DATE: 24-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NUMBER OF SEQUENCES: THREE DIMENSIONAL HORMONE STRUCTURE  
REGISTRATION NUMBER: 25,722  
INFORMATION FOR SEQ ID NO: 2:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 145 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
HYPOTHETICAL: NO  
ANTI-SENSE: NO  
ORIGINAL SOURCE:  
ORGANISM: Homo sapiens  
STRAIN: BETA-SUBUNIT HUMAN CHORIONIC GONADOTROPIN

US-08-395-238-2

Query Match 99.1%; Score 770; DB 2; Length 145;  
Best Local Similarity 100.0%; Pred. No. 1.3e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQWVYNR 61  
DB 1 SKEPLRPRCPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQWVYNR 60  
QY 62 DVFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGGPKDHPHPLTCDPRFQDSSS 121  
DB 61 DVFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGGPKDHPHPLTCDPRFQDSSS 120  
QY 122 SKAPPSLPSPSRLPSPSDT 141  
DB 121 SKAPPSLPSPSRLPSPSDT 140

RESULT 3  
US-09-142-320-12  
Sequence 12, Application US/09142320  
Patent No. 6194154  
GENERAL INFORMATION:  
APPLICANT: Bellet, Dominique  
APPLICANT: Bidart, Jean-Michel  
APPLICANT: Vidaud, Michel  
ATTORNEY/AGENT INFORMATION:  
NUMBER OF SEQUENCES: HUMAN CELL TRANSFORMATION DETECTION METHOD  
CURRENT FILING DATE: 1998-09-04  
EARLIER APPLICATION NUMBER: PCT/FR97/00361  
EARLIER FILING DATE: 1997-02-28  
EARLIER APPLICATION NUMBER: FR 96 02683  
EARLIER FILING DATE: 1996-03-04  
NUMBER OF SEQ ID NOS: 24  
SOFTWARE: Patentin Ver. 2.0  
SEQ ID NO 12  
US-09-142-320-12  
TYPE: PRT  
ORGANISM: human

Query Match 99.1%; Score 770; DB 4; Length 145;  
Best Local Similarity 100.0%; Pred. No. 1.3e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQWVYNR 61  
DB 1 SKEPLRPRCPINATLAVKEGCPVCIWTTICAGCTPTMRVLOGVLPALPQWVYNR 60  
QY 62 DVFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGGPKDHPHPLTCDPRFQDSSS 121  
DB 61 DVFESIRLPGCPGVNPNVYVALSCQCALCRSTTDCGGPKDHPHPLTCDPRFQDSSS 120  
QY 122 SKAPPSLPSPSRLPSPSDT 141  
DB 121 SKAPPSLPSPSRLPSPSDT 140

RESULT 4  
US-09-142-320-13  
Sequence 13, Application US/09142320  
Patent No. 6194154  
GENERAL INFORMATION:  
APPLICANT: Bellet, Dominique  
APPLICANT: Bidart, Jean-Michel  
APPLICANT: Vidaud, Michel  
ATTORNEY/AGENT INFORMATION:  
NUMBER OF SEQUENCES: HUMAN CELL TRANSFORMATION DETECTION METHOD  
CURRENT FILING DATE: 1998-09-04  
EARLIER APPLICATION NUMBER: PCT/FR97/00361  
EARLIER FILING DATE: 1997-02-28  
EARLIER APPLICATION NUMBER: FR 96 02683  
EARLIER FILING DATE: 1996-03-04  
NUMBER OF SEQ ID NOS: 24  
SOFTWARE: Patentin Ver. 2.0  
SEQ ID NO 13  
US-09-142-320-13  
TYPE: PRT  
ORGANISM: human

US-09-142-320-13  
: CURRENT FILING DATE: 1998-09-04  
: EARLIER APPLICATION NUMBER: PCT/FR97/00361  
: EARLIER FILING DATE: 1997-02-28  
: EARLIER APPLICATION NUMBER: FR 96 02683  
: EARLIER FILING DATE: 1996-03-04  
: NUMBER OF SEQ ID NOS: 24  
: SOFTWARE: Patent in Ver. 2.0  
: SEQ ID NO: 13  
: LENGTH: 145  
: TYPE: PRT  
: ORGANISM: human

Query Match 99.13; Score 770; DB 4; Length 145;  
Best Local Similarity 100.04; Pred. No. 1.3e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKESGVCITVTTCAGYCTMTRVLGVLPAQVVCNVR 61  
DB 1 SKEPLRPRCPINATLAVKESGVCITVTTCAGYCTMTRVLGVLPAQVVCNVR 60  
QY 62 DVRFESIRLPCPGVNPVSVAVALSQCACLCRRSTTDCGGPKDHLPLTCDPRFQDSS 121  
DB 61 DVRFESIRLPCPGVNPVSVAVALSQCACLCRRSTTDCGGPKDHLPLTCDPRFQDSS 120  
QY 122 SKAPPPSLPSRLPGPSDT 141  
DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 5  
US-09-142-320-14  
: Sequence 14, Application US/09142320  
: Patent No. 6194154  
: GENERAL INFORMATION:  
: APPLICANT: Bellet, Dominique  
: APPLICANT: Bidart, Jean-Michel  
: APPLICANT: Vidaud, Michel  
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE GLYCOPROTEIN HORMONE QUARTET  
: CURRENT FILING DATE: 1998-09-04  
: EARLIER APPLICATION NUMBER: PCT/FR97/00361  
: EARLIER FILING DATE: 1997-02-28  
: EARLIER APPLICATION NUMBER: FR 96 02683  
: NUMBER OF SEQ ID NOS: 24  
: SOFTWARE: Patent in Ver. 2.0  
: SEQ ID NO: 14  
: LENGTH: 145  
: TYPE: PRT  
: ORGANISM: human

Query Match 99.13; Score 770; DB 4; Length 145;  
Best Local Similarity 100.04; Pred. No. 1.3e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKESGVCITVTTCAGYCTMTRVLGVLPAQVVCNVR 61  
DB 1 SKEPLRPRCPINATLAVKESGVCITVTTCAGYCTMTRVLGVLPAQVVCNVR 60  
QY 62 DVRFESIRLPCPGVNPVSVAVALSQCACLCRRSTTDCGGPKDHLPLTCDPRFQDSS 121  
DB 61 DVRFESIRLPCPGVNPVSVAVALSQCACLCRRSTTDCGGPKDHLPLTCDPRFQDSS 120  
QY 122 SKAPPPSLPSRLPGPSDT 141  
DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 6

US-09-142-320-15  
: Sequence 15, Application US/09142320  
: Patent No. 6194154  
: GENERAL INFORMATION:  
: APPLICANT: Bellet, Dominique  
: APPLICANT: Bidart, Jean-Michel  
: APPLICANT: Vidaud, Michel  
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE GLYCOPROTEIN HORMONE QUARTET  
: CURRENT FILING DATE: 1998-09-04  
: EARLIER APPLICATION NUMBER: PCT/FR97/00361  
: EARLIER FILING DATE: 1997-02-28  
: EARLIER APPLICATION NUMBER: FR 96 02683  
: NUMBER OF SEQ ID NOS: 24  
: SOFTWARE: Patent in Ver. 2.0  
: SEQ ID NO: 15  
: LENGTH: 145  
: TYPE: PRT  
: ORGANISM: human

Query Match 99.13; Score 770; DB 4; Length 145;  
Best Local Similarity 100.04; Pred. No. 1.3e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKESGVCITVTTCAGYCTMTRVLGVLPAQVVCNVR 61  
DB 1 SKEPLRPRCPINATLAVKESGVCITVTTCAGYCTMTRVLGVLPAQVVCNVR 60  
QY 62 DVRFESIRLPCPGVNPVSVAVALSQCACLCRRSTTDCGGPKDHLPLTCDPRFQDSS 121  
DB 61 DVRFESIRLPCPGVNPVSVAVALSQCACLCRRSTTDCGGPKDHLPLTCDPRFQDSS 120  
QY 122 SKAPPPSLPSRLPGPSDT 141  
DB 121 SKAPPPSLPSRLPGPSDT 140

RESULT 7  
US-09-142-320-16  
: Sequence 16, Application US/09142320  
: Patent No. 623890  
: GENERAL INFORMATION:  
: APPLICANT: BOIME, William R.  
: APPLICANT: MOYLE, William R.  
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE GLYCOPROTEIN HORMONE QUARTET  
: CURRENT FILING DATE: 1998-09-04  
: EARLIER APPLICATION NUMBER: PCT/FR97/00361  
: EARLIER FILING DATE: 1997-02-28  
: EARLIER APPLICATION NUMBER: FR 96 02683  
: NUMBER OF SEQ ID NOS: 24  
: SOFTWARE: Patent in Ver. 2.0  
: SEQ ID NO: 16  
: LENGTH: 145  
: TYPE: PRT  
: ORGANISM: human

Query Match 99.13; Score 770; DB 4; Length 145;  
Best Local Similarity 100.04; Pred. No. 1.3e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKESGVCITVTTCAGYCTMTRVLGVLPAQVVCNVR 61  
DB 1 SKEPLRPRCPINATLAVKESGVCITVTTCAGYCTMTRVLGVLPAQVVCNVR 60  
QY 62 DVRFESIRLPCPGVNPVSVAVALSQCACLCRRSTTDCGGPKDHLPLTCDPRFQDSS 121  
DB 61 DVRFESIRLPCPGVNPVSVAVALSQCACLCRRSTTDCGGPKDHLPLTCDPRFQDSS 120  
QY 122 SKAPPPSLPSRLPGPSDT 141  
DB 121 SKAPPPSLPSRLPGPSDT 140

;; FILING DATE: 18-FEB-1994  
;; ATTORNEY/AGENT INFORMATION:  
;; NAME: Murashige, Kate H  
;; REGISTRATION NUMBER: 29,959  
;; REFERENCE/DOCKET NUMBER: 29500-20050.25  
;; TELECOMMUNICATION INFORMATION:  
;; TELEPHONE: 202-887-1500  
;; TELEFAX: 202-887-0763  
;;  
;; INFORMATION FOR SEQ ID NO: 68:  
;; SEQUENCE CHARACTERISTICS:  
;; LENGTH: 145 amino acids  
;; TYPE: amino acid  
;; STRANDEDNESS: single  
;; TOPOLOGY: linear  
US-09-813-288-68  
Query Match 99.1% Score 770; DB 4; Length 145;  
Best Local Similarity 100.0%; Pred. No. 1.3e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTNTRVLOGVLPALPQVVCNVR 61  
DB 1 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTNTRVLOGVLPALPQVVCNVR 60  
QY 62 DVRFESIRLPCPGVNVVSYVALSCCALCRSTTDCGGPKDHPLTCDPRFQDSSS 121  
DB 61 DVRFESIRLPCPGVNVVSYVALSCCALCRSTTDCGGPKDHPLTCDPRFQDSSS 120  
QY 122 SKAPPSLPSPRLPGSDT 141  
DB 121 SKAPPSLPSPRLPGSDT 140  
RESULT 8  
US-09-282-357-68  
; Sequence 68, Application US/09282357  
; Patent No. 6242580  
; GENERAL INFORMATION:  
; APPLICANT: ROIME, Irving  
; ATTORNEY/AGENT INFORMATION:  
; NAME: ROIME, William R.  
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
; NUMBER OF SEQUENCES: 83  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: MORRISON & FOERSTER  
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
; CITY: Washington  
; STATE: DC  
; COUNTRY: USA  
; ZIP: 20006-1888  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Diskette  
; OPERATING SYSTEM: DOS  
; SOFTWARE: FASTSEQ for Windows Version 2.0  
; CURRENT APPLICATION DATA:  
; FILING DATE:  
; CLASSIFICATION:  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 08/918,288  
; FILING DATE: 25 AUG-1997  
; APPLICATION NUMBER: 08/953,524  
; FILING DATE: 09-MAY-1997  
; APPLICATION NUMBER: 08/199,382  
; FILING DATE: 18-FEB-1994  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Murashige, Kate H  
; REGISTRATION NUMBER: 29,959  
; REFERENCE/DOCKET NUMBER: 29500-20050.25  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 202-887-1500  
; TELEFAX: 202-887-0763

;; TELEFAX: 202-887-0763  
;;  
;; INFORMATION FOR SEQ ID NO: 68:  
;; SEQUENCE CHARACTERISTICS:  
;; LENGTH: 145 amino acids  
;; TYPE: amino acid  
;; STRANDEDNESS: single  
;; TOPOLOGY: linear  
US-09-282-357-68  
Query Match 99.1% Score 770; DB 4; Length 145;  
Best Local Similarity 100.0%; Pred. No. 1.3e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTNTRVLOGVLPALPQVVCNVR 61  
DB 1 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGYCPMTNTRVLOGVLPALPQVVCNVR 60  
QY 62 DVRFESIRLPCPGVNVVSYVALSCCALCRSTTDCGGPKDHPLTCDPRFQDSSS 121  
DB 61 DVRFESIRLPCPGVNVVSYVALSCCALCRSTTDCGGPKDHPLTCDPRFQDSSS 120  
QY 122 SKAPPSLPSPRLPGSDT 141  
DB 121 SKAPPSLPSPRLPGSDT 140  
RESULT 9  
US-08-918-288-3  
; Sequence 3, Application US/08918288  
; Patent No. 6238950  
; GENERAL INFORMATION:  
; APPLICANT: ROIME, Irving  
; ATTORNEY/AGENT INFORMATION:  
; NAME: ROIME, William R.  
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
; NUMBER OF SEQUENCES: 83  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: MORRISON & FOERSTER  
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
; CITY: Washington  
; STATE: DC  
; COUNTRY: USA  
; ZIP: 20006-1888  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Diskette  
; OPERATING SYSTEM: DOS  
; SOFTWARE: FASTSEQ for Windows Version 2.0  
; CURRENT APPLICATION DATA:  
; FILING DATE:  
; CLASSIFICATION:  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 09/282,357  
; FILING DATE: 08/953,524  
; APPLICATION NUMBER: 08/199,382  
; FILING DATE: 18-FEB-1994  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Murashige, Kate H  
; REGISTRATION NUMBER: 29,959  
; REFERENCE/DOCKET NUMBER: 29500-20050.25  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 202-887-1500  
; TELEFAX: 202-887-0763  
; INFORMATION FOR SEQ ID NO: 3:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 265 amino acids  
; TYPE: amino acid  
; STRANDEDNESS: single



TOPOLOGY: linear  
MOLECULE TYPE: protein  
FRAGMENT TYPE: internal  
US-08-918-288-3

Query Match 99.1%; Score 770; DB 4; Length 265;  
Best Local Similarity 100.0%; Pred. No. 2.6e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVQLQVLPALPQVVCNTR 61  
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVQLQVLPALPQVVCNTR 80  
QY 62 DVFESIRLPCPRGVNPNVSYVALSCCALCRSTTDCGPKDHPHLCDDPRFQSSS 121  
DB 81 DVFESIRLPCPRGVNPNVSYVALSCCALCRSTTDCGPKDHPHLCDDPRFQSSS 140  
QY 122 SKAPPSLPSPRLPGSDT 141  
DB 141 SKAPPSLPSPRLPGSDT 160

RESULT 10  
US-08-918-288-39  
Sequence 39, Application US/08918288  
Patent No. 6242580

GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSQ for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/918,288  
FILING DATE: 09-MAY-1997  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 09/282,357  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763

INFORMATION FOR SEQ ID NO: 39:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 265 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
FRAGMENT TYPE: internal  
US-08-918-288-39

Query Match 99.1%; Score 770; DB 4; Length 265;  
Best Local Similarity 100.0%; Pred. No. 2.6e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVQLQVLPALPQVVCNTR 61  
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVQLQVLPALPQVVCNTR 80  
QY 62 DVFESIRLPCPRGVNPNVSYVALSCCALCRSTTDCGPKDHPHLCDDPRFQSSS 121  
DB 81 DVFESIRLPCPRGVNPNVSYVALSCCALCRSTTDCGPKDHPHLCDDPRFQSSS 140  
QY 122 SKAPPSLPSPRLPGSDT 141  
DB 141 SKAPPSLPSPRLPGSDT 160

RESULT 11  
US-09-282-357-3  
Sequence 3, Application US/09282357  
Patent No. 6242580

GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSQ for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/282,357  
FILING DATE: 09-MAY-1997  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/918,288  
FILING DATE: 25-AUG-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763

INFORMATION FOR SEQ ID NO: 3:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 265 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
FRAGMENT TYPE: internal  
US-09-282-357-3

Query Match 99.1%; Score 770; DB 4; Length 265;  
Best Local Similarity 100.0%; Pred. No. 2.6e-66;  
Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCPMTVRVQLQVLPALPQVVCNTR 61

Db 21 SKEPRLPRCPINATLAVKEGCPVCIWNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 80  
 Oy 62 DVRESIRLPCGPGVNPVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRPDQSSS 121  
 Db 81 DVRESIRLPCGPGVNPVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRPDQSSS 140  
 Oy 122 SKAPPSLPSPSRLPGPSDT 141  
 Db 141 SKAPPSLPSPSRLPGPSDT 160

RESULT 12  
 : Sequence 39, Application US/09282357  
 : Patent No. 5968513  
 : GENERAL INFORMATION:  
 : APPLICANT: BOIME, Irving  
 : APPLICANT: MOYLE, William R.  
 : TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
 : TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
 : NUMBER OF SEQUENCES: 83  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESSEE: MORRISON & FOERSTER  
 : STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
 : CITY: Washington  
 : STATE: DC  
 : COUNTRY: USA  
 : ZIP: 20006-1888  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Diskette  
 : COMPUTER: IBM Compatible  
 : OPERATING SYSTEM: DOS  
 : SOFTWARE: FASTSEQ for Windows Version 2.0  
 : CURRENT APPLICATION DATA:  
 : FILING DATE: 09/09/282,357  
 : FILING DATE: 09/09/282,357  
 : CLASSIFICATION: 536  
 : PRIOR APPLICATION DATA:  
 : APPLICATION NUMBER: 08/918,288  
 : FILING DATE: 25 AUG-1997  
 : APPLICATION NUMBER: 08/853,524  
 : FILING DATE: 09-MAY-1997  
 : APPLICATION NUMBER: 08/199,382  
 : FILING DATE: 18-FEB-1994  
 : ATTORNEY/AGENT INFORMATION:  
 : NAME: MURPHY, Robert  
 : REGISTRATION NUMBER: 29,959  
 : REFERENCE/DOCKET NUMBER: 29500-20050.25  
 : TELECOMMUNICATION INFORMATION:  
 : TELEPHONE: 202-887-1500  
 : TELEFAX: 202-887-0763  
 : TELEX:  
 : INFORMATION FOR SEQ ID NO: 39:  
 : SEQUENCE CHARACTERISTICS:  
 : LENGTH: 265 amino acids  
 : TYPE: amino acid  
 : TOPOLOGY: single  
 : MOLECULE TYPE: protein  
 : FRAGMENT TYPE: Internal  
 : US-09-282-357-39

Query Match 99.1%; Score 770; DB 4; Length 265;  
 Best Local Similarity 100.0%; Pred. No. 2.6e-66;  
 Matches 140; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 Oy 2 SKEPRLPRCPINATLAVKEGCPVCIWNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 61  
 Db 21 SKEPRLPRCPINATLAVKEGCPVCIWNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 80  
 Oy 62 DVRESIRLPCGPGVNPVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRPDQSSS 121

Db 81 DVRESIRLPCGPGVNPVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRPDQSSS 140  
 Oy 122 SKAPPSLPSPSRLPGPSDT 141  
 Db 141 SKAPPSLPSPSRLPGPSDT 160

RESULT 13  
 : Sequence 2, Application US/08709924  
 : Patent No. 5968513  
 : GENERAL INFORMATION:  
 : APPLICANT: Gallo, Robert C.  
 : APPLICANT: Bryant, Joseph  
 : APPLICANT: Lunardi-Iskandar, Yanto  
 : TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS  
 : TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN  
 : NUMBER OF SEQUENCES: 26  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESSEE: Pennie & Edmonds  
 : STREET: 1155 Avenue of the Americas  
 : CITY: New York  
 : STATE: New York  
 : COUNTRY: USA  
 : ZIP: 10036-2711  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Floppy disk  
 : COMPUTER: IBM PC compatible  
 : OPERATING SYSTEM: PC-DOS/MS-DOS  
 : SOFTWARE: Patent In Release #1.0, Version #1.30  
 : CURRENT APPLICATION DATA:  
 : APPLICATION NUMBER: US/08/709,924  
 : FILING DATE: 09-SEP-1996  
 : CLASSIFICATION: 514  
 : ATTORNEY/AGENT INFORMATION:  
 : NAME: Mirock, S. Leslie  
 : REGISTRATION NUMBER: 18,972  
 : REFERENCE/DOCKET NUMBER: 8769-018  
 : TELECOMMUNICATION INFORMATION:  
 : TELEPHONE: (212) 790-9090  
 : TELEFAX: (212) 869-9741/8864  
 : TELEX: 66141 PENNIE  
 : INFORMATION FOR SEQ ID NO: 2:  
 : SEQUENCE CHARACTERISTICS:  
 : LENGTH: 165 amino acids  
 : TYPE: amino acid  
 : TOPOLOGY: linear  
 : MOLECULE TYPE: protein  
 : US-08-709-924-2

Query Match 98.7%; Score 767; DB 2; Length 165;  
 Best Local Similarity 99.3%; Pred. No. 2.9e-66;  
 Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;  
 Oy 2 SKEPRLPRCPINATLAVKEGCPVCIWNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 61  
 Db 21 SKEPRLPRCPINATLAVKEGCPVCIWNTTICAGYCPMTNRVLQGVLPALPQVYCNTR 80  
 Oy 62 DVRESIRLPCGPGVNPVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRPDQSSS 121  
 Db 81 DVRESIRLPCGPGVNPVSYVALSCCALCRSTTDCGGPKDHPKLTCDPRPDQSSS 140  
 Oy 122 SKAPPSLPSPSRLPGPSDT 141  
 Db 141 SKAPPSLPSPSRLPGPSDT 160

RESULT 14  
 : Sequence 2, Application US/08709925  
 : Patent No. 5997871  
 : GENERAL INFORMATION:  
 : APPLICANT: Gallo, Robert C.

```

1 APPLICANT: Bryant, Joseph
2 APPLICANT: Lunardi-Iskandar, Yanto
3 TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY
4 TITLE OF INVENTION: ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
5 NUMBER OF SEQUENCES: 26
6 CORRESPONDENCE ADDRESS:
7 ADDRESSEE: Pennie & Edmonds LLP
8 STREET: 1155 Avenue of the Americas
9 CITY: New York
10 STATE: New York
11 COUNTRY: USA
12 ZIP: 10036-2711
13 COMPUTER READABLE FORM:
14 MEDIUM TYPE: Floppy disk
15 OPERATING SYSTEM: IBM PC compatible
16 SOFTWARE: PatentIn Release #1.0, Version #1.30
17 CURRENT APPLICATION DATA: /08/709,925
18 FILING DATE: 09-SEP-1996
19 CLASSIFICATION: 512
20 ATTORNEY/AGENT INFORMATION:
21 NAME: Mirock, S. Leslie
22 REGISTRATION NUMBER: 18,872
23 REFERENCE/DOCKET NUMBER: 8769-017
24 TELECOMMUNICATION INFORMATION:
25 TELEPHONE: (212) 690-9090
26 TELEFAX: (212) 669-9741/8864
27 TELE: 66141 PENNIE
28 INFORMATION FOR SEQ ID NO: 2:
29 SEQUENCE CHARACTERISTICS:
30 LENGTH: 165 amino acids
31 TYPE: amino acid
32 TOPOLOGY: linear
33 MOLECULE TYPE: protein
34 US-08-709-925-2
35
36 Query Match 98.7% Score 767, DB 2, Length 165;
37 Best Local Similarity 99.3%, Prid No. 2, 9e-66;
38 Matches 139; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
39
40 QY 2 SKEPLRRCRPTNATLAEKEGCPVCITVNTTTCAGYCPMTNRVLQVLQVLPALPVQVYCNR 61
41 IDB 1 SKEPLRRCRPTNATLAEKEGCPVCITVNTTTCAGYCPMTNRVLQVLQVLPALPVQVYCNR 80
42 QY 62 DYRFESTRLQCPGPNVNVSTAVALSOCALCRSTTDCGCGPKDHPHLCDDPRFDQSSS 121
43 IDB 81 DYRFESTRLQCPGPNVNVSTAVALSOCALCRSTTDCGCGPKDHPHLCDDPRFDQSSS 140
44 QY 122 SKAPPSLPSPSRLPGPSDT 141
45 IDB 141 SKAPPSLPSPSRLPGPSDT 160
46
47 RESULT 15
48 US-08-709-948-2 Application US/08709948
49 Sequence 2, 63, 56
50 Patent In Progress
51 GENERAL INFORMATION:
52 APPLICANT: Gallo, Robert C.
53 APPLICANT: Bryant, Joseph
54 APPLICANT: Lunardi-Iskandar, Yanto
55 TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
56 TITLE OF INVENTION: BY ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
57 NUMBER OF SEQUENCES: 26
58 CORRESPONDENCE ADDRESS:
59 ADDRESSEE: Pennie & Edmonds LLP
60 STREET: 1155 Avenue of the Americas
61 CITY: New York
62 STATE: New York
63 COUNTRY: USA
64 ZIP: 10036-2711
65 COMPUTER READABLE FORM

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1 MEDIUM TYPE: Floppy disk
2 COMPUTER: IBM PC compatible
3 OPERATING SYSTEM: PC-DOS/MS-DOS
4 SOFTWARE: Patent In Release #1.0, Version #1.30
5 CURRENT APPLICATION DATA:
6 APPLICATION NUMBER: US/08/709,948
7 FILING DATE: 09-SEP-1996
8 CLASSIFICATION: 424
9 ATTORNEY/AGENT INFORMATION:
10 NAME: Mirock, S. Leslie
11 ADDRESS: 10000 W. 10th St., #672
12 REFERENCE/DOCKET NUMBER: 8769-016
13 TELECOMMUNICATION INFORMATION:
14 TELEPHONE: (212) 790-9090
15 TELEFAX: (212) 869-9741/8864
16 TELEX: 66141 PENNIE
17 INFORMATION FOR SEQ ID NO: 2:
18 SEQUENCE CHARACTERISTICS:
19 LENGTH: 165 amino acids
20 METHOD: amino acid
21 TOPOLOGY: linear
22 MOLECULE TYPE: protein
23 US-08-709-948-2
24
25 Query Match 98.74; Score 767; DB 4; Length 165;
26 Best Local Similarity 99.34; Pred. No. 2.9e-66;
27 Matches 139; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
28
29 QY 2 SKEPLRRCRPNINATLAVEKGGCPICVTIVTTICAGYCPMTATVLOGVLPALPQVCNVR 61
30
31 Db 21 SKEPLRRCRPNINATLAVEKGGCPICVTIVTTICAGYCPMTATVLOGVLPALPQVCNVR 80
32
33 QY 62 DVFRFSIRLPGCPRGVNPVSYAVALSCQALCRSTTDCGGPKDHPPLTCDDPRFDSSS 121
34
35 Db 81 DVFRFSIRLPGCPRGVNPVSYAVALSCQALCRSTTDCGGPKDHPPLTCDDPRFDSSS 140
36
37 QY 122 SKAPPPSLPSPKLPGPSDT 141
38
39 Db 141 SKAPPPSLPSPKLPGPSDT 160
40
41 RESULT 16
42 US-08-425-673-1
43 Sequence 1, Application US/08425673
44 Patent No. 5508261
45 GENERAL INFORMATION:
46 APPLICANT: Moyle, William R.
47 TITLE OF INVENTION: Alteration of Glycoprotein Hormones Having
48 TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
49 TITLE OF INVENTION: Methods for Preparing and Using Same
50 NUMBER OF SEQUENCES: 12
51 CORRESPONDENCE ADDRESS:
52 ADDRESSEE: Richard R. Muccino
53 STREET: P. O. Box 1267
54 CITY: Princeton
55 STATE: New Jersey
56 COUNTRY: USA
57 ZIP: 08551
58 COMPUTER READABLE FORM:
59 MEDIUM TYPE: Floppy disk
60 COMPUTER: IBM PC compatible
61 OPERATING SYSTEM: PC-DOS/MS-DOS
62 SOFTWARE: Patent In Release #1.0, Version #1.25
63 CURRENT APPLICATION DATA:
64 APPLICATION NUMBER: US/08/425,673
65 FILING DATE:
66 CLASSIFICATION: 514
67 ATTORNEY/AGENT INFORMATION:
68 NAME: Muccino, Richard R.
69 ADDRESS: 10000 W. 10th St., #672
70 REFERENCE/DOCKET NUMBER: US 07/717,151
71 FILING DATE: 18-JUN-1991
72 ATTORNEY/AGENT INFORMATION:
73 NAME: Muccino, Richard R.
74 ADDRESS: 10000 W. 10th St., #672
75 REFERENCE/DOCKET NUMBER: 8769-016
76 TELECOMMUNICATION INFORMATION:
77 TELEPHONE: (212) 790-9090
78 TELEFAX: (212) 869-9741/8864
79 TELEX: 66141 PENNIE
80 INFORMATION FOR SEQ ID NO: 2:
81 SEQUENCE CHARACTERISTICS:
82 LENGTH: 165 amino acids
83 METHOD: amino acid
84 TOPOLOGY: linear
85 MOLECULE TYPE: protein
86 US-08-709-948-2

```

REGISTRATION NUMBER: 32,538  
 REFERENCE/DOCKET NUMBER: UND 1.0-004  
 TELECOMMUNICATION INFORMATION:  
 TELEPHONE: (609) 466-3407  
 TELEFAX: (609) 466-2760  
 INFORMATION FOR SEQ ID NO: 1:  
 SEQUENCE CHARACTERISTICS:  
 LENGTH: 145 amino acids  
 TYPE: amino acid  
 TOPOLOGY: linear  
 MOLECULE TYPE: peptide  
 HYPOTHETICAL: NO  
 ANTI-SENSE: NO  
 US-08-425-673-1

Query Match 98.3%; Score 764; DB 1; Length 145;  
 Best Local Similarity 99.3%; Pred. No. 4.9e-66;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 QY 2 SKEPLRRCRPRINATLAVKESGCPVITNTICAGYCPMTNVLQGVLPALPQVNCYR 61  
 DB 1 SKEPLRRCRPRINATLAVKESGCPVITNTICAGYCPMTNVLQGVLPALPQVNCYR 60  
 QY 62 DVRFESIRLPGCRGPNVYVAVALSCQALCRRTTDCGGPKDHPHLCDDPRFDQSSS 121  
 DB 61 DVRFESIRLPGCRGPNVYVAVALSCQALCRRTTDCGGPKDHPHLCDDPRFDQSSS 120  
 QY 122 SKAPPSLPSRSLPGSDT 141  
 DB 121 SKAPPSLPSRSLPGSDT 140

RESULT 17  
 US-08-425-673-2  
 Sequence 2, Application US/08425673  
 Patent No. 5508261  
 GENERAL INFORMATION:  
 APPLICANT: Moyie, William R.  
 TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having  
 TITLE OF INVENTION: Methods for Preparing and Using Same  
 NUMBER OF SEQUENCES: 12  
 CORRESPONDENCE ADDRESS:  
 ADDRESSEE: Richard R. Muccino  
 STREET: P.O. Box 1267  
 CITY: Princeton  
 STATE: New Jersey  
 COUNTRY: USA  
 ZIP: 08551  
 COMPUTER READABLE FORM:  
 MEDIUM TYPE: 3.5" diskette  
 OPERATING SYSTEM: PC-DOS/MS-DOS  
 SOFTWARE: PatentIn Release #1.0, Version #1.25  
 CURRENT APPLICATION DATA:  
 APPLICATION NUMBER: US/08/425,673  
 FILING DATE:  
 CLASSIFICATION: 514  
 PRIOR APPLICATION DATA:  
 APPLICATION NUMBER: US 07/17,151  
 FILING DATE: 18-JUN-1991  
 ATTORNEY/AGENT INFORMATION:  
 NAME: Richard R. Muccino  
 REGISTRATION NUMBER: 32,538  
 TELECOMMUNICATION INFORMATION:  
 TELEPHONE: (609) 466-3407  
 TELEFAX: (609) 466-2760  
 INFORMATION FOR SEQ ID NO: 2:  
 SEQUENCE CHARACTERISTICS:  
 LENGTH: 145 amino acids  
 TYPE: amino acid

TOPOLOGY: linear  
 MOLECULE TYPE: peptide  
 HYPOTHETICAL: NO  
 ANTI-SENSE: NO  
 US-08-425-673-2  
 Query Match 98.3%; Score 764; DB 1; Length 145;  
 Best Local Similarity 99.3%; Pred. No. 4.9e-66;  
 Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 QY 2 SKEPLRRCRPRINATLAVKESGCPVITNTICAGYCPMTNVLQGVLPALPQVNCYR 61  
 DB 1 SKEPLRRCRPRINATLAVKESGCPVITNTICAGYCPMTNVLQGVLPALPQVNCYR 60  
 QY 62 DVRFESIRLPGCRGPNVYVAVALSCQALCRRTTDCGGPKDHPHLCDDPRFDQSSS 121  
 DB 61 DVRFESIRLPGCRGPNVYVAVALSCQALCRRTTDCGGPKDHPHLCDDPRFDQSSS 120  
 QY 122 SKAPPSLPSRSLPGSDT 141  
 DB 121 SKAPPSLPSRSLPGSDT 140

RESULT 18  
 US-08-298-1898-1  
 Sequence 1, Application US/082981898  
 Patent No. 5674727  
 GENERAL INFORMATION:  
 APPLICANT: Dr. Laurence A. Cole and Dr. Andrew Kardana  
 TITLE OF INVENTION: NO. 5674727el Methods for Detecting Reproductive  
 TITLE OF INVENTION: Cancers of Tumors and Assay Products  
 TITLE OF INVENTION: Therefor  
 NUMBER OF SEQUENCES: 1  
 CORRESPONDENCE ADDRESS:  
 ADDRESSEE: Dr. Laurence A. Cole, c/o Dept. of Obstetrics and  
 STREET: 333 Cedar Street  
 CITY: New Haven  
 STATE: Connecticut  
 COUNTRY: USA  
 ZIP: 06510  
 COMPUTER READABLE FORM:  
 MEDIUM TYPE: 3.5" diskette  
 OPERATING SYSTEM: IBM PC compatible  
 SOFTWARE: Microsoft Word 7.0  
 CURRENT APPLICATION DATA:  
 APPLICATION NUMBER: US/08/298,189B  
 FILING DATE: 08/31/94  
 CLASSIFICATION: 435  
 ATTORNEY/AGENT INFORMATION:  
 NAME: Brian D. Voyce 28,917  
 REGISTRATION NUMBER: 919-638-3939  
 TELECOMMUNICATION INFORMATION:  
 TELEPHONE: 919-638-3939 or 803-272-1471  
 TELEFAX: 919-638-3939 or 803-272-1471  
 INFORMATION FOR SEQ ID NO: 1:  
 SEQUENCE CHARACTERISTICS:  
 LENGTH: 145 amino acids  
 TYPE: amino acid  
 STRANDEDNESS: No. 5674727 applicable  
 TOPOLOGY: Unknown  
 MOLECULE TYPE: subunit of hormone, specifically the  
 MOLECULE TYPE: beta subunit of hCG  
 ORIGIN: Human urine  
 FEATURE:  
 NAME/KEY: beta subunit of hCG that is nicked by CBME  
 LOCATION: NCG  
 IDENTIFICATION METHOD: N-terminal sequence analysis  
 PUBLICATION INFORMATION:  
 AUTHORS: Keutmann et alia  
 TITLE: "A Receptor-binding Region in Human  
 JOURNAL: proc Nat'l Acad Sci USA

/ VOLUME: 84  
/ ISSUE: NO. 5674727 applicable  
/ PAGES: 2038-2042  
/ DATE: 1987  
US-08-298-1898-1

Query Match 98.3%; Score 764; DB 1; Length 145;  
Best Local Similarity 98.6%; Pred. No. 4.9e-66;  
Matches 138; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCTMTNRVLQGLPALPOVVCNHR 61  
DB 1 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCTMTNRVLQGLPALPOVVCNHR 60  
QY 62 DVRFESIRLPGCPGPNVPSYAVALSQCALCRSTTDCGPKDHPDLTCDPRFOSSS 121  
DB 61 DVRFESIRLPGCPGPNVPSYAVALSQCALCRSTTDCGPKDHPDLTCDPRFOSSS 120  
QY 122 SKAPPSLPSPSLRPGPSDT 141  
DB 121 SKAPPSLPSPSLRPGPSDT 140

## RESULT 19

US-08-918-288-36  
: Sequence 36, Application US/08918288  
: Patent No. 6238890N;  
: GENERAL INFORMATION:  
: APPLICANT: MOYLE, Irving  
: APPLICANT: MOYLE, William R.  
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
: NUMBER OF SEQUENCES: 83  
: CORRESPONDENCE ADDRESS:  
: ADDRESSEE: MORRISON & FOERSTER  
: STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
: CITY: Washington  
: STATE: DC  
: COUNTRY: USA  
: ZIP: 20006-1888  
: COMPUTER READABLE FORM:  
: MEDIUM TYPE: Diskette  
: COMPUTER: IBM Compatible  
: OPERATING SYSTEM: DOS  
: SOFTWARE: FASTSQ for Windows Version 2.0  
: CURRENT APPLICATION DATA:  
: APPLICATION NUMBER: US/08/918,288  
: FILING DATE:  
: CLASSIFICATION:  
: PRIOR APPLICATION DATA:  
: APPLICATION NUMBER: 09/282,357  
: FILING DATE:  
: APPLICATION NUMBER: 08/853,524  
: FILING DATE: 09-MAY-1997  
: APPLICATION NUMBER: 08/199,382  
: FILING DATE: 18-FEB-1994  
: ATTORNEY/AGENT INFORMATION:  
: NAME: Murashige, Kate H  
: REGISTRATION NUMBER: 29,959  
: REFERENCE/DOCKET NUMBER: 29500-20050.25  
: TELEPHONE: 202-887-1500  
: TELEFAX: 202-887-0763  
: INFORMATION FOR SEQ ID NO: 36:  
: SEQUENCE CHARACTERISTICS:  
: LENGTH: 181 amino acids  
: TYPE: amino acid  
: STRANDEDNESS: single  
: TOPOLOGY: linear  
: MOLECULE TYPE: protein  
: FRAGMENT TYPE: Internal  
US-08-918-288-36

Query Match 98.3%; Score 764; DB 4; Length 181;  
Best Local Similarity 99.3%; Pred. No. 6.3e-66;  
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCTMTNRVLQGLPALPOVVCNHR 61  
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVNTTICAGYCTMTNRVLQGLPALPOVVCNHR 80  
QY 62 DVRFESIRLPGCPGPNVPSYAVALSQCALCRSTTDCGPKDHPDLTCDPRFOSSS 121  
DB 81 DVRFESIRLPGCPGPNVPSYAVALSQCALCRSTTDCGPKDHPDLTCDPRFOSSS 140  
QY 122 SKAPPSLPSPSLRPGPSDT 141  
DB 141 SKAPPSLPSPSLRPGPSDT 160

## RESULT 20

US-09-282-357-36  
: Sequence 36, Application US/09282357  
: Patent No. 6242580  
: GENERAL INFORMATION:  
: APPLICANT: BOIME, Irving  
: APPLICANT: MOYLE, William R.  
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
: NUMBER OF SEQUENCES: 83  
: CORRESPONDENCE ADDRESS:  
: ADDRESSEE: MORRISON & FOERSTER  
: STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
: CITY: Washington  
: STATE: DC  
: COUNTRY: USA  
: ZIP: 20006-1888  
: COMPUTER READABLE FORM:  
: MEDIUM TYPE: Diskette  
: COMPUTER: IBM Compatible  
: OPERATING SYSTEM: DOS  
: SOFTWARE: FASTSQ for Windows Version 2.0  
: CURRENT APPLICATION DATA:  
: APPLICATION NUMBER: US/09/282,357  
: FILING DATE:  
: CLASSIFICATION: 536  
: PRIOR APPLICATION DATA:  
: APPLICATION NUMBER: 08/918,288  
: FILING DATE: 25 AUG-1997  
: APPLICATION NUMBER: 08/853,524  
: FILING DATE: 09-MAY-1997  
: APPLICATION NUMBER: 08/199,382  
: FILING DATE: 18-FEB-1994  
: ATTORNEY/AGENT INFORMATION:  
: NAME: Murashige, Kate H  
: REGISTRATION NUMBER: 29,959  
: REFERENCE/DOCKET NUMBER: 29500-20050.25  
: TELECOMMUNICATION INFORMATION:  
: TELEPHONE: 202-887-1500  
: TELEFAX: 202-887-0763  
: TELEX:  
: INFORMATION FOR SEQ ID NO: 36:  
: SEQUENCE CHARACTERISTICS:  
: LENGTH: 181 amino acids  
: TYPE: amino acid  
: STRANDEDNESS: single  
: TOPOLOGY: linear  
: MOLECULE TYPE: protein  
: FRAGMENT TYPE: Internal  
US-09-282-357-36

Query Match 98.3%; Score 764; DB 4; Length 181;  
Best Local Similarity 99.3%; Pred. No. 6.3e-66;  
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

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QY 2 3KEPLRPRCRINATLAVKEGCGPCVITNTTCAGTCPTTRVLOGVLPALPOVCNKR 61
DB 21 3KEPLRPRCRIPQNTLAVKEGCGPCVITNTTCAGTCPTTRVLOGVLPALPOVCNKR 80
QY 62 DVFRESRLPCCRGVNVVYSAVALSCQCALCRSTTDCGCKPDRHPLTCDPDRQSSS 121
DB 81 DVFRESRLPCCRGVNVVYSAVALSCQCALCRSTTDCGCKPDRHPLTCDPDRQSSS 140
QY 122 SKAPPSLPSRLPGPSDT 141
DB 141 SKAPPSLPSRLPGPSDT 160

RESULT 21
US-09-142-320-16
: Sequence 11, Application US/09142320
: Patent No. 6194154
: GENERAL INFORMATION: Dominique
: APPLICANT: Bidart, Jean-Michel
: APPLICANT: Bidart, Jean-Michel
: APPLICANT: Vidaud, Michel
: APPLICANT: Lazar, Vladimir
: TITLE OF INVENTION: MALIGNANT HUMAN CELL TRANSFORMATION DETECTION METHOD
: FILE REFERENCE: 065691/0140
: CURRENT APPLICATION NUMBER: US/09/142,320
: CURRENT FILING DATE: 1998-09-04
: EARLIER FILING DATE: 1997-02-28/FR97/00361
: EARLIER APPLICATION NUMBER: FR 96 02683
: EARLIER FILING DATE: 1996-03-04
: NUMBER OF SEQ ID NOS: 24
: SOFTWARE: PatentIn Ver. 2.0
: SEQ ID NO 16
: LENGTH: 145
: TYPE: PRT
: ORGANISM: Human
US-09-142-320-16
Query Match 98.1%; Score 762; DB 4; Length 145;
Best Local Similarity 99.3%; Pred. No. 7,6e-66;
Matches 139; Conservative 0; Mismatches 1; Indels 0; Gaps

QY 2 3KEPLRPRCRINATLAVKEGCGPCVITNTTCAGTCPTTRVLOGVLPALPOVCNKR 61
DB 21 3KEPLRPRCRIPQNTLAVKEGCGPCVITNTTCAGTCPTTRVLOGVLPALPOVCNKR 80
QY 62 DVFRESRLPCCRGVNVVYSAVALSCQCALCRSTTDCGCKPDRHPLTCDPDRQSSS 121
DB 81 DVFRESRLPCCRGVNVVYSAVALSCQCALCRSTTDCGCKPDRHPLTCDPDRQSSS 140
QY 122 SKAPPSLPSRLPGPSDT 141
DB 121 SKAPPSLPSRLPGPSDT 140

RESULT 22
US-09-142-320-11
: Sequence 11, Application US/09142320
: Patent No. 6194154
: GENERAL INFORMATION: Dominique
: APPLICANT: Bellet, Dominique
: APPLICANT: Bidart, Jean-Michel
: APPLICANT: Vidaud, Michel
: APPLICANT: Lazar, Vladimir
: TITLE OF INVENTION: MALIGNANT HUMAN CELL TRANSFORMATION DETECTION METHOD
: FILE REFERENCE: 065691/0140
: CURRENT APPLICATION NUMBER: US/09/142,320
: CURRENT FILING DATE: 1998-09-04
: EARLIER FILING DATE: 1997-02-28
: EARLIER APPLICATION NUMBER: FR 96 02683
: EARLIER FILING DATE: 1996-03-04
: NUMBER OF SEQ ID NOS: 24

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: SOFTWARE: PatentIn Ver. 2.0
: SEQ ID NO: 11
: LENGTH: 145
: TYPE: PRT
: ORGANISM: human
: US-09-142-320-11

Query Match          96.5%; Score 750; DB 4; Length 145;
Best Local Similarity 97.9%; Pred. No. 1.1e-64;
Matches 137; Conservative 1; Mismatches 2; Indels 0; Gaps 0;

QY  2  SKEPLPRCPRPINATLAVEKGCPCVCTVNTTICAGCTPTMTRVLQGLPALPQVVCNRYR  61
DB  1  SRENLRPCRPINATLAVEKGCPCVCTVNTTICAGCTPTMTRVLQGLPALPQVVCNRYR  60

QY  62  DYRFESIRLQCGPCRGVNPVYVAVALSCQALCRSTTTDCGCGKDHPLTCDPFRQSSS  121
DB  1  DYRFESIRLQCGPCRGVNPVYVAVALSCQALCRSTTTDCGCGKDHPLTCDPFRQSSS  120

QY  61  DYRFESIRLQCGPCRGVNPVYVAVALSCQALCRSTTTDCGCGKDHPLTCDPFRQSSS  120
DB  1  DYRFESIRLQCGPCRGVNPVYVAVALSCQALCRSTTTDCGCGKDHPLTCDPFRQSSS  120

QY  122  SKAPPSLPSPSRLPGSDT  141
DB  121  SKAPPSLPSPSRLPGSDT  140

RESULT 23
US-09-142-320-4
: Sequence 4: Application US/09142320
: Patent In Ver. 2.0
: GENERAL INFORMATION:
: APPLICANT: Bellet, Dominique
: APPLICANT: Bidart, Jean-Michel
: APPLICANT: Vidaud, Michel
: APPLICANT: Lazar, Vladimir
: TITLE OF INVENTION: MALIGNANT HUMAN CELL TRANSFORMATION
: FILE REFERENCE: 065691/0140
: CURRENT APPLICATION NUMBER: US/09/142,320
: EARLIER APPLICATION NUMBER: 09/00361
: EARLIER FILING DATE: 1997-02-28
: EARLIER APPLICATION NUMBER: FR 96 02683
: EARLIER FILING DATE: 1996-03-04
: NUMBER OF SEQ ID NOS: 24
: SOFTWARE: PatentIn Ver. 2.0
: SEQ ID NO 4
: LENGTH: 145
: TYPE: PRT
: ORGANISM: human
: FEATURE:
: OTHER INFORMATION: consensus sequence
: FEATURE:
: OTHER INFORMATION: Xaa at position 2 is a Lys or Arg
: FEATURE:
: OTHER INFORMATION: Xaa at position 4 is a Pro or Met
: FEATURE:
: OTHER INFORMATION: Xaa at position 117 is an Ala or Asp
: US-09-142-320-4

Query Match          96.3%; Score 748; DB 4; Length 145;
Best Local Similarity 97.9%; Pred. No. 1.7e-64;
Matches 137; Conservative 0; Mismatches 3; Indels 0; Gaps 0;

QY  2  SKEPLPRCPRPINATLAVEKGCPCVCTVNTTICAGCTPTMTRVLQGLPALPQVVCNRYR  61
DB  1  SXELLRPCRPINATLAVEKGCPCVCTVNTTICAGCTPTMTRVLQGLPALPQVVCNRYR  60

QY  62  DYRFESIRLQCGPCRGVNPVYVAVALSCQALCRSTTTDCGCGKDHPLTCDPFRQSSS  121
DB  1  DYRFESIRLQCGPCRGVNPVYVAVALSCQALCRSTTTDCGCGKDHPLTCDPFRQSSS  120

QY  122  SKAPPSLPSPSRLPGSDT  141
DB  121  SKAPPSLPSPSRLPGSDT  140

```

RESULT 24  
 US-08-435-673-10  
 ; Sequence 10, Application US/08425673  
 ; Patent No. 6194177  
 ; GENERAL INFORMATION:  
 ; APPLICANT: Campbell, Robert K.  
 ; APPLICANT: Jameson, Bradford A.  
 ; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having  
 ; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and  
 ; TITLE OF INVENTION: Methods for Preparing and Using Same  
 ; NUMBER OF SEQUENCES: 12  
 ; CORRESPONDENCE ADDRESS:  
 ; ADDRESSEE: Richard R. Muccino  
 ; STREET: P.O. Box 1267  
 ; CITY: Princeton  
 ; STATE: New Jersey  
 ; COUNTRY: USA  
 ; ZIP: 08551  
 ; COMPUTER READABLE FORM:  
 ; MEDIUM TYPE: Floppy disk  
 ; COMPUTER: IBM PC compatible  
 ; OPERATING SYSTEM: PC-DOS/MS-DOS  
 ; SOFTWARE: Patent in Release #1.0, Version #1.25  
 ; CURRENT APPLICATION DATA:  
 ; APPLICATION NUMBER: US/08/435-673  
 ; FILING DATE:  
 ; PRIORITY DATE:  
 ; PRIOR APPLICATION DATA:  
 ; APPLICATION NUMBER: US 07/717,151  
 ; FILING DATE: 18 JUN-1991  
 ; NAME: Muccino, Richard R.  
 ; ATTORNEY/AGENT INFORMATION:  
 ; REGISTRATION NUMBER: 32,538  
 ; REFERENCE/DOCKET NUMBER: UND 1.0-004  
 ; TELECOMMUNICATION INFORMATION:  
 ; TELEPHONE: (609) 466-3407  
 ; TELEFAX: (609) 662-7600  
 ; INFORMATION FOR SEQ ID NO: 10:  
 ; SEQUENCE CHARACTERISTICS:  
 ; LENGTH: 145 amino acids  
 ; TYPE: amino acid  
 ; TOPOLOGY: linear  
 ; MOLECULE TYPE: peptide  
 ; HYPOTHETICAL: NO  
 ; ANTI-SENSE: NO  
 ; US-08-435-673-10  
 ;  
 ; Query Match 95.6%; Score 743; DB 1; Length 145;  
 ; Identical Similarity 86.4%; Pos. Matches 114; Mismatches 4; Indels 0; Gaps 0;  
 ; Matches 135; Conservative 1; Mismatches 4; Indels 0; Gaps 0;  
 ;  
 ; QY 2 SKEPLRPRCRPNATLAVKEGCPVITVTTICAGYCTPTMTVRVLCGLVLPALPQVVCNRYR 61  
 ; DB 1 SKEPLRPRCRPNATLAVKEGCPVITVTTICAGYCTPTMTVRVLCGLVLPALPQVVCNRYR 60  
 ;  
 ; QY 62 DVRFESIRLPCGRPNVYVAVSALSCCALCRRTTDCGGPKDHPDLPDPPDSSSSKAPPP 121  
 ; DB 61 DVRFESIRLPCGRPNVYVAVSALSCCALCRRTTDCGGPKDHPDLPDPPDSSSSKAPPP 120  
 ;  
 ; QY 122 SKAPPSRLPSPDPT 141  
 ; DB 121 SKAPPSRLPSPDPT 140  
 ;  
 ; RESULT 25  
 ; US-08-804-166-4  
 ; Sequence 4, Application US/08804166  
 ; Patent No. 6193972  
 ; GENERAL INFORMATION:  
 ; APPLICANT: Campbell, Robert K.  
 ; APPLICANT: Jameson, Bradford A.  
 ; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having  
 ; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and  
 ; TITLE OF INVENTION: Methods for Preparing and Using Same  
 ; NUMBER OF SEQUENCES: 22  
 ; CORRESPONDENCE ADDRESS:  
 ; ADDRESSEE: BROWDY AND NEIMARK  
 ; STREET: 419 Seventh Street N.W., Ste. 300  
 ; CITY: Washington  
 ; STATE: D.C.  
 ; COUNTRY: USA  
 ; ZIP: 22207  
 ; COMPUTER READABLE FORM:  
 ; MEDIUM TYPE: Floppy disk

; TITLE OF INVENTION: HYBRID PROTEINS  
 ; NUMBER OF SEQUENCES: 22  
 ; CORRESPONDENCE ADDRESS:  
 ; ADDRESSEE: BROWDY AND NEIMARK  
 ; STREET: 419 Seventh Street N.W., Ste. 300  
 ; CITY: Washington  
 ; STATE: D.C.  
 ; COUNTRY: USA  
 ; ZIP: 22207  
 ; COMPUTER READABLE FORM:  
 ; MEDIUM TYPE: Floppy disk  
 ; COMPUTER: IBM PC compatible  
 ; OPERATING SYSTEM: PC-DOS/MS-DOS  
 ; SOFTWARE: Patent in Release #1.0, Version #1.30  
 ; CURRENT APPLICATION DATA:  
 ; APPLICATION NUMBER: US/08/804,166  
 ; FILING DATE:  
 ; PRIORITY DATE:  
 ; PRIOR APPLICATION DATA:  
 ; APPLICATION NUMBER: 60/011,936  
 ; FILING DATE: 20 February 1996  
 ; CLASSIFICATION:  
 ; ATTORNEY/AGENT INFORMATION:  
 ; NAME: Browdy, Roger L.  
 ; REGISTRATION NUMBER: 25,618  
 ; REFERENCE/DOCKET NUMBER: CAMPBELL-2A  
 ; TELECOMMUNICATION INFORMATION:  
 ; TELEPHONE: (202) 624-5219  
 ; TELEFAX: (202) 713-5218  
 ; INFORMATION FOR SEQ ID NO: 4:  
 ; SEQUENCE CHARACTERISTICS:  
 ; LENGTH: 307 amino acids  
 ; TYPE: amino acid  
 ; TOPOLOGY: linear  
 ; MOLECULE TYPE: protein  
 ; US-08-804-166-4  
 ;  
 ; Query Match 95.2%; Score 740; DB 4; Length 307;  
 ; Identical Similarity 100.0%; Pos. Matches 307; Mismatches 0; Indels 0; Gaps 0;  
 ; Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 ;  
 ; QY 8 PCRPRINATLAVKEGCPVITVTTICAGYCTPTMTVRVLCGLVLPALPQVVCNRYR 67  
 ; DB 169 PCRPRINATLAVKEGCPVITVTTICAGYCTPTMTVRVLCGLVLPALPQVVCNRYR 228  
 ;  
 ; QY 68 IRUPCGRPNVYVAVSALSCCALCRRTTDCGGPKDHPDLPDPPDSSSSKAPPP 127  
 ; DB 229 IRUPCGRPNVYVAVSALSCCALCRRTTDCGGPKDHPDLPDPPDSSSSKAPPP 127  
 ;  
 ; QY 128 SKAPPSRLPSPDPT 141  
 ; DB 289 SKAPPSRLPSPDPT 302  
 ;  
 ; RESULT 26  
 ; US-08-910-991-4  
 ; Sequence 4, Application US/08910991  
 ; Patent No. 6194177  
 ; GENERAL INFORMATION:  
 ; APPLICANT: Campbell, Robert K.  
 ; APPLICANT: Jameson, Bradford A.  
 ; APPLICANT: Chappel, Scott C.  
 ; TITLE OF INVENTION: HYBRID PROTEINS  
 ; NUMBER OF SEQUENCES: 22  
 ; CORRESPONDENCE ADDRESS:  
 ; ADDRESSEE: BROWDY AND NEIMARK  
 ; STREET: 419 Seventh Street N.W., Ste. 300  
 ; CITY: Washington  
 ; STATE: D.C.  
 ; COUNTRY: USA  
 ; ZIP: 22207  
 ; COMPUTER READABLE FORM:  
 ; MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/910,991  
FILING DATE: 20 February 1996  
ATTORNEY/AGENT INFORMATION:  
NAME: YUN, Allen C.  
REGISTRATION NUMBER: 37,971  
REFERENCE/DOCKET NUMBER: CAMPBELL-28  
TELEPHONE: (202) 628-5197  
TELEFAX: (202) 737-3528  
INFORMATION FOR SEQ ID NO: 4:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 307 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-910-991-4

Query Match  
Best Local Similarity 100.0%  
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 8 PCRINATLAVEKEGCPVCITVNTTICAGYCTMTRVLGVLQVLPALPQVVCNTRDYRES 67  
DB 169 PCRINATLAVEKEGCPVCITVNTTICAGYCTMTRVLGVLQVLPALPQVVCNTRDYRES 228

QY 68 IRLPGCPGVNPVSYAVALSQCACLCRRSTTDCGPKDRPLTCDPRFQSSSKAPPP 127  
DB 229 IRLPGCPGVNPVSYAVALSQCACLCRRSTTDCGPKDRPLTCDPRFQSSSKAPPP 288

QY 128 SLPSPSLRPGSDT 141  
DB 289 SLPSPSLRPGSDT 302

RESULT 27  
US-08-804-166-8  
Sequence 8, Application US/08804166  
Patent No. 6193972  
GENERAL INFORMATION:  
APPLICANT: Campbell, Robert K.  
APPLICANT: Campbell, Robert A.  
APPLICANT: Charpel, Scott C.  
TITLE OF INVENTION: HYBRID PROTEINS  
NUMBER OF SEQUENCES: 22  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: BROWDY AND NEIMARK  
STREET: 419 Seventh Street N.W., Ste. 300  
CITY: Washington  
STATE: D.C.  
COUNTRY: USA  
ZIP: 22207  
COMPUTER READABLE FORM:  
MEDIUM TYPE: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/804,166  
FILING DATE: 20 February 1996  
ATTORNEY/AGENT INFORMATION:  
NAME: YUN, Allen C.  
REGISTRATION NUMBER: 37,971  
REFERENCE/DOCKET NUMBER: CAMPBELL-28  
TELEPHONE: (202) 628-5197  
TELEFAX: (202) 737-3528  
INFORMATION FOR SEQ ID NO: 4:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 307 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-910-991-4

FILING DATE: 20 February 1996  
CLASSIFICATION:  
ATTORNEY/AGENT INFORMATION:  
NAME: Browdy, Roger L.  
REGISTRATION NUMBER: 35,618  
REFERENCE/DOCKET NUMBER: CAMPBELL-2A  
TELEPHONE: (202) 628-5197  
TELEFAX: (202) 737-3528  
INFORMATION FOR SEQ ID NO: 8:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 336 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-804-166-8

Query Match  
Best Local Similarity 100.0%  
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 8 PCRINATLAVEKEGCPVCITVNTTICAGYCTMTRVLGVLQVLPALPQVVCNTRDYRES 67  
DB 198 PCRINATLAVEKEGCPVCITVNTTICAGYCTMTRVLGVLQVLPALPQVVCNTRDYRES 257

QY 68 IRLPGCPGVNPVSYAVALSQCACLCRRSTTDCGPKDRPLTCDPRFQSSSKAPPP 127  
DB 238 IRLPGCPGVNPVSYAVALSQCACLCRRSTTDCGPKDRPLTCDPRFQSSSKAPPP 317

QY 128 SLPSPSLRPGSDT 141  
DB 318 SLPSPSLRPGSDT 331

RESULT 28  
US-08-910-991-8  
Sequence 8, Application US/08910991  
Patent No. 6194177  
GENERAL INFORMATION:  
APPLICANT: Campbell, Robert K.  
APPLICANT: Campbell, Robert A.  
APPLICANT: Charpel, Scott C.  
TITLE OF INVENTION: HYBRID PROTEINS  
NUMBER OF SEQUENCES: 22  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: BROWDY AND NEIMARK  
STREET: 419 Seventh Street N.W., Ste. 300  
CITY: Washington  
STATE: D.C.  
COUNTRY: USA  
ZIP: 22207  
COMPUTER READABLE FORM:  
MEDIUM TYPE: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/910,991  
FILING DATE: 20 February 1996  
ATTORNEY/AGENT INFORMATION:  
NAME: YUN, Allen C.  
REGISTRATION NUMBER: 37,971  
REFERENCE/DOCKET NUMBER: CAMPBELL-2B  
TELEPHONE: (202) 628-5197  
TELEFAX: (202) 737-3528  
INFORMATION FOR SEQ ID NO: 8:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 336 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-804-166-8



INFORMATION FOR SEQ ID NO: 8:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 336 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-910-991-6

Query Match 95.2%; Score 740; DB 4; Length 336;  
Best Local Similarity 100.0%; Pred. No. 2.5e-63;  
Matches 134; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 8 PRCPINATLAVEKEGCPVCTVNTTICAGTCPTMTVRVLAGVLPALPQVVCNRYDVFES 67  
|||||  
DB 198 PRCPINATLAVEKEGCPVCTVNTTICAGTCPTMTVRVLAGVLPALPQVVCNRYDVFES 257  
|||||  
QY 68 IRLPCRGVNVVYVAVALSCQCALCRSTTDCGPKDHPHLCDDPRFQSSSKAPPP 127  
|||||  
DB 258 IRLPCRGVNVVYVAVALSCQCALCRSTTDCGPKDHPHLCDDPRFQSSSKAPPP 317  
|||||  
QY 128 SLSPSRLPQPSDT 141  
|||||  
DB 318 SLSPSRLPQPSDT 331  
|||||

RESULT 29  
US-08-918-288-6  
Sequence 6, Application US/08918288  
Patent No. 6242580  
GENERAL INFORMATION:

APPLICANT: BOYLE, IRVING  
APPLICANT: MOYLE, WILLIAM R.  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
RECEPTOR FOR GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA

COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FastSeq for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/918,288  
FILING DATE:  
CLASSIFICATION:

PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 09/282,357  
FILING DATE:  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:

INFORMATION FOR SEQ ID NO: 6:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 234 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein

FRAGMENT TYPE: Internal  
US-08-918-288-6

Query Match 81.4%; Score 648; DB 4; Length 234;  
Best Local Similarity 95.2%; Pred. No. 1e-54;  
Matches 118; Conservative 0; Mismatches 6; Indels 0; Gaps 0;

QY 2 SKEDPRCPINATLAVEKEGCPVCTVNTTICAGTCPTMTVRVLAGVLPALPQVVCNTR 61  
|||||  
DB 21 SKEDPRCPINATLAVEKEGCPVCTVNTTICAGTCPTMTVRVLAGVLPALPQVVCNTR 80  
|||||  
QY 62 DVRESIRLPCGPRGVNVVYVAVALSCQCALCRSTTDCGPKDHPHLCDDPRFQSSSS 121  
|||||  
DB 81 DVRESIRLPCGPRGVNVVYVAVALSCQCALCRSTTDCGPKDHPHLCDDPRFQSSSS 140  
|||||  
QY 122 SKAP 125  
|||  
DB 141 GSNP 144  
|||

RESULT 30

US-09-282-357-6  
Sequence 6, Application US/09282357  
Patent No. 6242580  
GENERAL INFORMATION:

APPLICANT: BOYLE, IRVING  
APPLICANT: MOYLE, WILLIAM R.  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
RECEPTOR FOR GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA

COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FastSeq for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/282,357  
FILING DATE:  
CLASSIFICATION: 536

PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/918,288  
FILING DATE: 25 AUG-1997/853,524  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:

INFORMATION FOR SEQ ID NO: 6:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 234 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
FRAGMENT TYPE: Internal  
US-09-282-357-6

Query Match 81.4%; Score 648; DB 4; Length 234;  
Best Local Similarity 95.2%; Pred. No. 1e-54;

Matches 118; Conservative 0; Mismatches 6; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 61  
 DB 21 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 80  
 OY 62 DVRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPILTCDDPR 121  
 DB 81 DVRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPILTCDDPR 140  
 OY 122 SKAP 125  
 DB 141 GSAP 144

## RESULT 31

US-08-918-288-69  
 ; Sequence 69, Application US/08918288  
 ; Patent No. 6242580  
 ; GENERAL INFORMATION:  
 ; APPLICANT: BOIME, Irving  
 ; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
 ; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
 ; NUMBER OF SEQUENCES: 83  
 ; CORRESPONDENCE ADDRESS:  
 ; ADDRESSEE: MORRISON & FORSTER  
 ; STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
 ; CITY: Washington  
 ; STATE: DC  
 ; COUNTRY: USA  
 ; ZIP: 20006-1888  
 ; COMPUTER READABLE FORM:  
 ; MEDIUM TYPE: Diskette  
 ; COMPUTER: IBM Compatible  
 ; OPERATING SYSTEM: DOS  
 ; SOFTWARE: FastSeq for Windows Version 2.0  
 ; CURRENT APPLICATION DATA:  
 ; FILING DATE: 09-MAY-1997  
 ; FILING DATE: 18-FEB-1994  
 ; CLASSIFICATION:  
 ; PRIOR APPLICATION NUMBER: 09/282,357  
 ; APPLICATION NUMBER: 08/918,288  
 ; FILING DATE: 25 AUG-1997  
 ; APPLICATION NUMBER: 08/853,524  
 ; FILING DATE: 09-MAY-1997  
 ; APPLICATION NUMBER: 08/199,382  
 ; FILING DATE: 18-FEB-1994  
 ; ATTORNEY/AGENT INFORMATION:  
 ; NAME: MURSHALGE, Kate H  
 ; REGISTRATION NUMBER: 9,959  
 ; REFERENCE/DOCKET NUMBER: 29500-20050.25  
 ; TELECOMMUNICATION INFORMATION:  
 ; TELEPHONE: 202-887-1500  
 ; TELEFAX: 202-887-0763  
 ; TELEX:  
 ; INFORMATION FOR SEQ ID NO: 69:  
 ; SEQUENCE CHARACTERISTICS:  
 ; LENGTH: 114 amino acids  
 ; TYPE: amino acid  
 ; STRANDEDNESS: single  
 ; TOPOLOGY: linear

US-08-918-288-69  
 Query Match  
 Best Local Similarity 100.0%; Pred. No. 1.2e-53;  
 Matches 114; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 60  
 OY 62 DVRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPILTCDDPR 115

## US-08-918-288-69

Query Match  
 Best Local Similarity 100.0%; Pred. No. 1.2e-53;  
 Matches 114; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 60  
 OY 62 DVRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPILTCDDPR 115

DB 61 DVRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPILTCDDPR 114

## RESULT 32

US-09-282-357-69  
 ; Sequence 69, Application US/09282357  
 ; Patent No. 6242580  
 ; GENERAL INFORMATION:  
 ; APPLICANT: BOIME, Irving  
 ; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
 ; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
 ; NUMBER OF SEQUENCES: 83  
 ; CORRESPONDENCE ADDRESS:  
 ; ADDRESSEE: MORRISON & FORSTER  
 ; STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
 ; CITY: Washington  
 ; STATE: DC  
 ; COUNTRY: USA  
 ; ZIP: 20006-1888  
 ; COMPUTER READABLE FORM:  
 ; MEDIUM TYPE: Diskette  
 ; COMPUTER: IBM Compatible  
 ; OPERATING SYSTEM: DOS  
 ; SOFTWARE: FastSeq for Windows Version 2.0  
 ; CURRENT APPLICATION DATA:  
 ; FILING DATE: 09-MAY-1997  
 ; FILING DATE: 18-FEB-1994  
 ; CLASSIFICATION:  
 ; PRIOR APPLICATION NUMBER: 08/918,288  
 ; APPLICATION NUMBER: 08/853,524  
 ; FILING DATE: 25 AUG-1997  
 ; APPLICATION NUMBER: 08/199,382  
 ; FILING DATE: 18-FEB-1994  
 ; ATTORNEY/AGENT INFORMATION:  
 ; NAME: MURSHALGE, Kate H  
 ; REGISTRATION NUMBER: 9,959  
 ; REFERENCE/DOCKET NUMBER: 29500-20050.25  
 ; TELECOMMUNICATION INFORMATION:  
 ; TELEPHONE: 202-887-1500  
 ; TELEFAX: 202-887-0763  
 ; TELEX:  
 ; INFORMATION FOR SEQ ID NO: 69:  
 ; SEQUENCE CHARACTERISTICS:  
 ; LENGTH: 114 amino acids  
 ; TYPE: amino acid  
 ; STRANDEDNESS: single  
 ; TOPOLOGY: linear

## US-09-282-357-69

Query Match  
 Best Local Similarity 100.0%; Pred. No. 1.2e-53;  
 Matches 114; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 OY 2 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 61  
 DB 1 SKEPLRPRCPINATLAVEKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPOVVCNTR 60  
 OY 62 DVRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPILTCDDPR 115  
 DB 61 DVRFESIRLPGCPGVNPNVSYAVALSCCALCRSTTDCGGPKDHPILTCDDPR 114

## RESULT 33

US-08-918-288-24  
 ; Sequence 24, Application US/08918288  
 ; Patent No. 6238890  
 ; GENERAL INFORMATION:  
 ; APPLICANT: BOIME, Irving  
 ; APPLICANT: BOIME, William R.

```

? TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
? TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
? NUMBER OF SEQUENCES: 83
? CORRESPONDENCE ADDRESS:
? ADDRESSEE: MORRISON & FOERSTER
? STREET: 2000 Pennsylvania Avenue, NW, suite 5500
? CITY: Washington
? STATE: DC
? COUNTRY: USA
? ZIP: 20006-1888
? COMPUTER READABLE FORM:
? MEDIUM TYPE: Diskette
? OPERATING SYSTEM: DOS
? SOFTWARE: FASTSEQ for Windows Version 2.0
? CURRENT APPLICATION DATA:
? APPLICATION NUMBER: US/08/918,288
? FILING DATE:
? CLASSIFICATION:
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 09/282,357
? FILING DATE:
? APPLICATION NUMBER: 08/853,524
? FILING DATE: 09-MAY-1997
? APPLICATION NUMBER: 08/199,382
? FILING DATE: 18-FEB-1994
? ATTORNEY/AGENT INFORMATION:
? NAME: Murashige, Kate H
? REGISTRATION NUMBER: 29,959
? REFERENCE/DOCKET NUMBER: 29500-20050.25
? TELECOMMUNICATION INFORMATION:
? TELEPHONE: 202-887-1500
? TELEFAX: 202-887-0763
? TELEX:
? INFORMATION FOR SEQ ID NO: 24:
? SEQUENCE CHARACTERISTICS:
? LENGTH: 234 amino acids
? TYPE: amino acid
? STRANDEDNESS: single
? TOPOLOGY: linear
? MOLECULE TYPE: protein
? FRAGMENT TYPE: Internal
? US-08-918-288-24

Query Match 74.9%; Score 582; DB 4; Length 234;
Best Local Similarity 88.7%; Pred. No. 2e-48;
Matches 110; Conservative 0; Mismatches 14; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGCTPTMTVRVQLGVLPALPQVNCYR 61
DB 21 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGCTPTMTVRVQLGVLPALPQVNCYR 80
QY 62 DVFESIRLPGCPGVNPVSYAVALSQCALCRSTTDCYVRLGPGSYCDPRGSGS 121
DB 81 DVFESIRLPGCPGVNPVSYAVALSQCALCRSTTDCYVRLGPGSYCDPRGSGS 140
QY 122 SKAP 125
DB 141 GSAP 144

RESULT 34
US-09-282-357-24
US-08-425-673-9
Sequence 24, Application US/09282357
Patent No. 6242580
GENERAL INFORMATION:
APPLICANT: MOYLE, Irving
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
NUMBER OF SEQUENCES: 83
CORRESPONDENCE ADDRESS:
ADDRESSEE: MORRISON & FOERSTER

```

```

? STREET: 2000 Pennsylvania Avenue, NW, suite 5500
? CITY: Washington
? STATE: DC
? COUNTRY: USA
? ZIP: 20006-1888
? COMPUTER READABLE FORM:
? MEDIUM TYPE: Diskette
? OPERATING SYSTEM: DOS
? SOFTWARE: FASTSEQ for Windows Version 2.0
? CURRENT APPLICATION DATA:
? APPLICATION NUMBER: US/09/282,357
? FILING DATE:
? CLASSIFICATION: 536
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 08/918,288
? FILING DATE: 23-AUG-1997
? APPLICATION NUMBER: 08/853,524
? FILING DATE: 09-MAY-1997
? APPLICATION NUMBER: 08/199,382
? FILING DATE: 18-FEB-1994
? ATTORNEY/AGENT INFORMATION:
? NAME: Murashige, Kate H
? REGISTRATION NUMBER: 29,959
? REFERENCE/DOCKET NUMBER: 29500-20050.25
? TELECOMMUNICATION INFORMATION:
? TELEPHONE: 202-887-1500
? TELEFAX: 202-887-0763
? TELEX:
? INFORMATION FOR SEQ ID NO: 24:
? SEQUENCE CHARACTERISTICS:
? LENGTH: 234 amino acids
? TYPE: amino acid
? STRANDEDNESS: single
? TOPOLOGY: linear
? MOLECULE TYPE: protein
? FRAGMENT TYPE: Internal
? US-09-282-357-24

Query Match 74.9%; Score 582; DB 4; Length 234;
Best Local Similarity 88.7%; Pred. No. 2e-48;
Matches 110; Conservative 0; Mismatches 14; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGCTPTMTVRVQLGVLPALPQVNCYR 61
DB 21 SKEPLRPRCPINATLAVKEGCPVCTVNTTICAGCTPTMTVRVQLGVLPALPQVNCYR 80
QY 62 DVFESIRLPGCPGVNPVSYAVALSQCALCRSTTDCYVRLGPGSYCDPRGSGS 121
DB 81 DVFESIRLPGCPGVNPVSYAVALSQCALCRSTTDCYVRLGPGSYCDPRGSGS 140
QY 122 SKAP 125
DB 141 GSAP 144

RESULT 35
US-08-425-673-9
Sequence 9, Application US/08425673
Patent No. 5508261
GENERAL INFORMATION:
APPLICANT: Moyle, William R.
TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
TITLE OF INVENTION: Receptor Binding Specificity and Activity and
TITLE OF INVENTION: Methods for Preparing and Using Same
NUMBER OF SEQUENCES: 12
CORRESPONDENCE ADDRESS:
ADDRESSEE: Richard R. Muccino
STREET: P.O. Box 1267
CITY: Princeton
STATE: New Jersey
COUNTRY: USA

```

ZIP: 08551  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent In Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/425,673  
CLASSIFICATION: 514  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/717,151  
FILING DATE: 18-JUN-1991  
ATTORNEY/AGENT INFORMATION:  
NAME: Muccino, Richard R.  
REGISTRATION NUMBER: 32,538  
REFERENCE/DOCKET NUMBER: UND 1.0-004  
TELEPHONE: (609) 466-3407  
TELEFAX: (609) 466-2760  
INFORMATION FOR SEQ ID NO: 9:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 114 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: peptide  
HYPOTHETICAL: NO  
ANTI-SENSE: NO  
US-08-425-673-9

Query Match 73.28; Score 569; DB 1; Length 114;  
Best Local Similarity 93.61; Pred. No. 1.6e-47;  
Matches 103; Conservative 1; Mismatches 6; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPTRVRLQGLPALPQVVCNTR 61  
DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPTRVRLQGLPALPQVVCNTR 60

QY 62 DVRFESIRLPGCPRGVNPVSYVALSCQALCRSTTDCGPKDHPHLCDDPR 111  
DB 61 DVRFESIRLPGCPRGVNPVSYVALSCQALCRSTTDCGPKDHPHLCDDPR 110

RESULT 36  
US-08-425-673-7  
Sequence 7, Application US/08425673  
Patent No. 5508261  
GENERAL INFORMATION:  
APPLICANT: Moyle, William R.  
ATTORNEY/AGENT INFORMATION:  
NAME: Moyle, Robert K.  
REGISTRATION NUMBER: 32,538  
REFERENCE/DOCKET NUMBER: UND 1.0-004  
TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and  
TITLE OF INVENTION: Methods For Preparing and Using Same  
NUMBER OF SEQUENCES: 12  
CORRESPONDENCE ADDRESS:  
ADDRESS: Richard R. Muccino  
STREET: P.O. Box 1267  
CITY: Princeton  
STATE: New Jersey  
COUNTRY: USA  
ZIP: 08551  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent In Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/425,673  
CLASSIFICATION: 514  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/717,151  
FILING DATE: 18-JUN-1991

ATTORNEY/AGENT INFORMATION:  
NAME: Muccino, Richard R.  
REGISTRATION NUMBER: 32,538  
REFERENCE/DOCKET NUMBER: UND 1.0-004  
TELEPHONE: (609) 466-3407  
TELEFAX: (609) 466-2760  
INFORMATION FOR SEQ ID NO: 7:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 114 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: peptide  
HYPOTHETICAL: NO  
ANTI-SENSE: NO  
US-08-425-673-7

Query Match 72.28; Score 561; DB 1; Length 114;  
Best Local Similarity 92.16; Pred. No. 9.1e-47;  
Matches 105; Conservative 0; Mismatches 9; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPTRVRLQGLPALPQVVCNTR 61  
DB 1 SKEPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPTRVRLQGLPALPQVVCNTR 60

QY 62 DVRFESIRLPGCPRGVNPVSYVALSCQALCRSTTDCGPKDHPHLCDDPR 115  
DB 61 DVRFESIRLPGCPRGVNPVSYVALSCQALCRSTTDCGPKDHPHLCDDPR 114

RESULT 37  
US-08-918-288-9  
Sequence 9, Application US/08918288  
Patent No. 6238890  
GENERAL INFORMATION:  
APPLICANT: Boime, Irving  
ATTORNEY/AGENT INFORMATION:  
NAME: Moyle, William R.  
REGISTRATION NUMBER: 32,538  
REFERENCE/DOCKET NUMBER: UND 1.0-004  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 8  
CORRESPONDENCE ADDRESS:  
ADDRESS: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
OPERATING SYSTEM: DOS  
SOFTWARE: FastISO for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/918,288  
FILING DATE:  
CLASSIFICATION:  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 09/282,357  
FILING DATE:  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
ATTORNEY/AGENT INFORMATION:  
NAME: Murrain, Kate H.  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:  
INFORMATION FOR SEQ ID NO: 9:  
SEQUENCE CHARACTERISTICS:

LENGTH: 234 amino acids  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
FRAGMENT TYPE: internal  
US-08-918-288-9

Query Match 71.9%; Score 559; DB 4; Length 234;  
Best Local Similarity 81.5%; Pred. No. 3.2e-46;  
Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;

QY 2 SKEPLRCPINATLAVKSGCPVCITVNTTICAGYCTMTVRVQLGVLPALPQVWYR 61  
DB 21 SREPLRCPINATLAVKSGCPVCITVNTTICAGYCTMTVRVQLGVLPALPQVWYR 80  
QY 62 DVRFESIRLPGCPGVDPVVSVAVALSCQALCRSTDCGPKDHPHLCDDPRFDDSS 121  
DB 81 DVRFESIRLPGCPGVDPVVSVAVALSCQALCRSTDCGPKDHPHLCDDPRFDDSS 140  
QY 122 SKAP 125  
DB 141 GSAP 144

## RESULT 38

US-09-282-357-9  
Sequence 9, Application US/09282357  
Patent No. 6242580  
GENERAL INFORMATION:  
APPLICANT: BOYLE, Irving  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSER: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSEQ for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/282,357  
FILING DATE:  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/918,288  
FILING DATE: 25 AUG-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:

INFORMATION FOR SEQ ID NO: 9:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 234 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein

FRAGMENT TYPE: internal  
US-09-282-357-9

Query Match 71.9%; Score 559; DB 4; Length 234;  
Best Local Similarity 81.5%; Pred. No. 3.2e-46;  
Matches 101; Conservative 6; Mismatches 17; Indels 0; Gaps 0;

QY 2 SKEPLRCPINATLAVKSGCPVCITVNTTICAGYCTMTVRVQLGVLPALPQVWYR 61  
DB 21 SREPLRCPINATLAVKSGCPVCITVNTTICAGYCTMTVRVQLGVLPALPQVWYR 80  
QY 62 DVRFESIRLPGCPGVDPVVSVAVALSCQALCRSTDCGPKDHPHLCDDPRFDDSS 121  
DB 81 DVRFESIRLPGCPGVDPVVSVAVALSCQALCRSTDCGPKDHPHLCDDPRFDDSS 140  
QY 122 SKAP 125  
DB 141 GSAP 144

## RESULT 39

US-08-918-288-21  
Sequence 21, Application US/08918288  
Patent No. 6238890  
GENERAL INFORMATION:  
APPLICANT: BOYLE, William R.  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSER: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSEQ for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/918,288  
FILING DATE:

CLASSIFICATION:  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 09/282,357  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:

INFORMATION FOR SEQ ID NO: 21:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 234 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
FRAGMENT TYPE: internal  
US-08-918-288-21

Query Match 71.2%; Score 553; DB 4; Length 234;  
Best Local Similarity 85.5%; Pred. No. 1.2e-45;

Matches 106; Conservative 0; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKPLPRCRPRINATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGVLPALPQVVCNVR 61  
 DB 21 SKPLPRCRPRINATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGVLPALPQVVCNVR 80  
 QY 62 DVRFESIRLPGCGPVNPNVSYVALSCQALCRSTTDCGPKDHPKPLTCDPRFQDSSS 121  
 DB 81 DVRFESIRLPGCGPVNPNVSYVALSCQALCRSTTDCGPKDHPKPLTCDPRFQDSSS 140  
 QY 122 SKAP 125  
 DB 141 GSAP 144

RESULT 40  
 US-09-282-357-21  
 : Sequence 21, Application US/09282357  
 : Patent No. 6242560  
 : GENERAL INFORMATION:  
 : APPLICANT: BOIME, Irving  
 : TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
 : TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
 : NUMBER OF SEQUENCES: 83  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESS: MORRISON & FOERSTER  
 : STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
 : CITY: Washington  
 : STATE: DC  
 : COUNTRY: USA  
 : ZIP: 20006-1888  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Diskette  
 : COMPUTER: IBM Compatible  
 : OPERATING SYSTEM: DOS  
 : SOFTWARE: FASTSEQ for Windows Version 2.0  
 : CURRENT APPLICATION DATA:  
 : APPLICATION NUMBER: US/09/282,357  
 : FILING DATE: 25 AUG-1997  
 : CLASSIFICATION: 536  
 : PRIOR APPLICATION DATA:  
 : APPLICATION NUMBER: 08/918,288  
 : FILING DATE: 09-MAY-1997  
 : APPLICATION NUMBER: 08/853,524  
 : FILING DATE: 09-MAY-1997  
 : APPLICATION NUMBER: 08/199,382  
 : FILING DATE: 18-FEB-1994  
 : ATTORNEY/AGENT INFORMATION:  
 : NAME: Mutashise, Kate H  
 : REGISTRATION NUMBER: 29,959  
 : REFERENCE/DOCKET NUMBER: 29500-20050.25  
 : TELECOMMUNICATION INFORMATION:  
 : TELEPHONE: 202-887-1500  
 : TELEFAX: 202-887-0763  
 : TELEX:  
 : INFORMATION FOR SEQ ID NO: 21:  
 : SEQUENCE CHARACTERISTICS:  
 : LENGTH: 234 amino acids  
 : TYPE: amino acid  
 : STRANDEDNESS: single  
 : TOPOLOGY: linear  
 : MOLECULE TYPE: protein  
 : FRAGMENT TYPE: internal  
 : US-09-282-357-21

Query Match 71.2%; Score 553; DB 4; Length 234;  
 Best Local Similarity 85.5%; Pred. No. 1.2e-45;  
 Matches 106; Conservative 0; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKPLPRCRPRINATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGVLPALPQVVCNVR 61  
 DB 21 SKPLPRCRPRINATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGVLPALPQVVCNVR 80

0;

QY 62 DVRFESIRLPGCGPVNPNVSYVALSCQALCRSTTDCGPKDHPKPLTCDPRFQDSSS 121  
 DB 81 DVRFESIRLPGCGPVNPNVSYVALSCQALCRSTTDCGPKDHPKPLTCDPRFQDSSS 140  
 QY 122 SKAP 125  
 DB 141 GSAP 144

RESULT 41

US-08-918-288-18  
 : Sequence 18, Application US/08918288  
 : Patent No. 6238890  
 : GENERAL INFORMATION:  
 : APPLICANT: BOIME, Irving  
 : TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
 : TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
 : NUMBER OF SEQUENCES: 83  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESS: MORRISON & FOERSTER  
 : STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
 : CITY: Washington  
 : STATE: DC  
 : COUNTRY: USA  
 : ZIP: 20006-1888  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Diskette  
 : COMPUTER: IBM Compatible  
 : OPERATING SYSTEM: DOS  
 : SOFTWARE: FASTSEQ for Windows Version 2.0  
 : CURRENT APPLICATION DATA:  
 : APPLICATION NUMBER: US/08/918,288  
 : FILING DATE:  
 : CLASSIFICATION:  
 : PRIOR APPLICATION DATA:  
 : APPLICATION NUMBER: 09/282,357  
 : FILING DATE: 08/953,524  
 : FILING DATE: 09-MAY-1997  
 : APPLICATION NUMBER: 08/199,382  
 : FILING DATE: 18-FEB-1994  
 : ATTORNEY/AGENT INFORMATION:  
 : NAME: Mutashise, Kate H  
 : REGISTRATION NUMBER: 29,959  
 : REFERENCE/DOCKET NUMBER: 29500-20050.25  
 : TELECOMMUNICATION INFORMATION:  
 : TELEPHONE: 202-887-1500  
 : TELEFAX: 202-887-0763  
 : TELEX:  
 : INFORMATION FOR SEQ ID NO: 18:  
 : SEQUENCE CHARACTERISTICS:  
 : LENGTH: 237 amino acids  
 : TYPE: amino acid  
 : STRANDEDNESS: single  
 : TOPOLOGY: linear  
 : MOLECULE TYPE: protein  
 : FRAGMENT TYPE: internal  
 : US-08-918-288-18

Query Match 70.7%; Score 549; DB 4; Length 237;  
 Best Local Similarity 86.0%; Pred. No. 2.9e-45;  
 Matches 104; Conservative 2; Mismatches 15; Indels 0; Gaps 0;

QY 2 SKPLPRCRPRINATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGVLPALPQVVCNVR 61  
 DB 21 SKPLPRCRPRINATLAVKEGCPVCITVNTTICAGYCPMTNRVLQGVLPALPQVVCNVR 80  
 QY 62 DVRFESIRLPGCGPVNPNVSYVALSCQALCRSTTDCGPKDHPKPLTCDPRFQDSSS 121  
 DB 81 DVRFESIRLPGCGPVNPNVSYVALSCQALCRSTTDCGPKDHPKPLTCDPRFQDSSS 140

QY 122 S 122  
Db 141 S 141

RESULT 42  
US-09-282-357-18  
; Sequence 18, Application US/09282357  
; Patent No. 6242580  
; GENERAL INFORMATION:  
; APPLICANT: BOIME, Irving  
; APPLICANT: MOYLE, William R.  
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
; NUMBER OF SEQUENCES: 83  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: MORRISON & FOERSTER  
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
; CITY: Washington  
; STATE: DC  
; COUNTRY: USA  
; ZIP: 20006-1888  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Diskette  
; COMPUTER: IBM Compatible  
; OPERATING SYSTEM: DOS  
; SOFTWARE: FASTSEQ for Windows Version 2.0  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/09282,357  
; FILING DATE:  
; CLASSIFICATION:  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 08/918,288  
; FILING DATE: 25 AUG-1997  
; APPLICATION NUMBER: 08/853,524  
; FILING DATE: 09-MAY-1997  
; APPLICATION NUMBER: 08/199,382  
; FILING DATE: 18-FEB-1994  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Murashige, Kate H  
; REGISTRATION NUMBER: 29,959  
; REFERENCE/DOCKET NUMBER: 29500-20050.25  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 202-887-1500  
; TELEFAX: 202-887-0763  
; TELEX:  
; INFORMATION FOR SEQ ID NO: 18:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 114 amino acids  
; TYPE: amino acid  
; STRANDEDNESS: single  
; TOPOLOGY: linear  
; MOLECULE TYPE: protein  
; FRAGMENT TYPE: internal  
US-09-282-357-18

Query Match 70.74; Score 549; DB 4; Length 237;  
Best Local Similarity 86.04; Pred. No. 2.9e-45;  
Matches 104; Conservative 2; Mismatches 15; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVEKCCPCVITVNTTICAGYCTMTVRVLYQVLPALPOVVCYR 61  
Db 21 SKEPLRRCRPNATLAVEKCCPCVITVNTTICAGYCTMTVRVLYQVLPALPOVVCYR 80

QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGPKDHPPLTCDPDDSS 121  
Db 81 DVRFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGPKDHPPLTCDPDDSS 140

QY 122 S 122  
Db 141 S 141

RESULT 43  
US-08-918-288-71  
; Sequence 71, Application US/08918288  
; Patent No. 6238890  
; GENERAL INFORMATION:  
; APPLICANT: BOIME, Irving  
; APPLICANT: MOYLE, William R.  
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
; NUMBER OF SEQUENCES: 83  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: MORRISON & FOERSTER  
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
; CITY: Washington  
; STATE: DC  
; COUNTRY: USA  
; ZIP: 20006-1888  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Diskette  
; COMPUTER: IBM Compatible  
; OPERATING SYSTEM: DOS  
; SOFTWARE: FASTSEQ for Windows Version 2.0  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/08918,288  
; FILING DATE:  
; CLASSIFICATION:  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 09/282,357  
; FILING DATE: 25 AUG-1997  
; APPLICATION NUMBER: 08/853,524  
; FILING DATE: 09-MAY-1997  
; APPLICATION NUMBER: 08/199,382  
; FILING DATE: 18-FEB-1994  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Murashige, Kate H  
; REGISTRATION NUMBER: 29,959  
; REFERENCE/DOCKET NUMBER: 29500-20050.25  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 202-887-1500  
; TELEFAX: 202-887-0763  
; TELEX:  
; INFORMATION FOR SEQ ID NO: 71:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 114 amino acids  
; TYPE: amino acid  
; STRANDEDNESS: single  
; TOPOLOGY: linear  
US-08-918-288-71

Query Match 70.04; Score 544; DB 4; Length 114;  
Best Local Similarity 85.18; Pred. No. 3.8e-45;  
Matches 97; Conservative 6; Mismatches 11; Indels 0; Gaps 0;

QY 2 SKEPLRRCRPNATLAVEKCCPCVITVNTTICAGYCTMTVRVLYQVLPALPOVVCYR 61  
Db 1 SKEPLRRCRPNATLAVEKCCPCVITVNTTICAGYCTMTVRVLYQVLPALPOVVCYR 60

QY 62 DVRFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGPKDHPPLTCDPDDP 115  
Db 61 DVRFESIRLPGCPGVNPNVSYAVALSQCACLRSTTDCGPKDHPPLTCDPDDP 114

RESULT 44  
US-09-282-357-71  
; Sequence 71, Application US/09282357  
; Patent No. 6242580  
; GENERAL INFORMATION:  
; APPLICANT: BOIME, Irving  
; APPLICANT: MOYLE, William R.  
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
; TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
; NUMBER OF SEQUENCES: 83  
; CORRESPONDENCE ADDRESS:

ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888

COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS

SOFTWARE: FastSeq for Windows Version 2.0

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/09/282.357

FILING DATE:

CLASSIFICATION: 536

PRIOR APPLICATION DATA:

APPLICATION NUMBER: 08/918.288

FILING DATE: 09-MAY-1997

APPLICATION NUMBER: 08/853.524

FILING DATE: 09-MAY-1997

APPLICATION NUMBER: 08/199.382

FILING DATE: 18-FEB-1994

ATTORNEY/AGENT INFORMATION:

NAME: Murrashige, Kate H

REGISTRATION NUMBER: 29.959

REFERENCE/DOCKET NUMBER: 29500-20050.25

TELECOMMUNICATION INFORMATION:

TELEPHONE: (202) 887-1300

TELEFAX: 202-887-0763

TELEX:

INFORMATION FOR SEQ ID NO: 71:

SEQUENCE CHARACTERISTICS:

LENGTH: 114 amino acids

TYPE: amino acid

STRANDEDNESS: single

TOPOLOGY: linear

US-09-282-357-71

Query Match  
Best Local Similarity 70.08; Score 544; DB 4; Length 114;  
Matches 97; Conservative 6; Mismatches 11; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKSGCPVCITVTTCAGYCTPTMTVLQGLPALPQVVCYR 61

DB 1 SREPLRPMCHPINAIALAVKSGCPVCITVTTCAGYCTPTMTVLQGLPALPQVVCYR 60

OY 62 DVRESIRLPGCPGVNPNVSVYAVALSQCQALCRRTTDCGGPKDHLPTCDHQP 115

DB 61 DVRESIRLPGCPGVNPNVSVYAVALSQCQALCRRTTDCGGPKDHLPTCDHQP 114

RESULT 45

US-08-425-673-11

Sequence 11, Application US/08425673

Patent No. 5508261

GENERAL INFORMATION:

APPLICANT: Moyle, William R.

APPLICANT: Campbell, Robert K.

TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having

TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and

TITLE OF INVENTION: Methods For Preparing and Using Same

NUMBER OF SEQUENCES: 12

CORRESPONDENCE ADDRESS:

ADDRESSEE: Richard R. Muccino

STREET: P.O. Box 1267

CITY: Princeton

STATE: New Jersey

COUNTRY: USA

ZIP: 08551

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PatentIn Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/425.673

FILING DATE:

CLASSIFICATION: 514

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US/07/717.151

FILING DATE: 09-MAY-1997

ATTORNEY/AGENT INFORMATION:

NAME: Muccino, Richard R.

REGISTRATION NUMBER: 32.538

REFERENCE/DOCKET NUMBER: UMD 1.0-004

TELECOMMUNICATION INFORMATION:

TELEPHONE: (609) 466-3407

TELEFAX: (609) 466-2760

INFORMATION FOR SEQ ID NO: 11:

SEQUENCE CHARACTERISTICS:

LENGTH: 117 amino acids

TYPE: amino acid

TOPOLOGY: linear

MOLSCULE TYPE: peptide

HYPOTHETICAL: NO

ANTI-SENSE: NO

US-08-425-673-11

Query Match  
Best Local Similarity 99.04; Score 540; DB 1; Length 117;

Matches 99; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVKSGCPVCITVTTCAGYCTPTMTVLQGLPALPQVVCYR 61

DB 1 SKEPLRPRCPINATLAVKSGCPVCITVTTCAGYCTPTMTVLQGLPALPQVVCYR 60

OY 62 DVRESIRLPGCPGVNPNVSVYAVALSQCQALCRRTTDC 101

DB 61 DVRESIRLPGCPGVNPNVSVYAVALSQCQALCRRTTDC 100

RESULT 46

US-08-318-388-15

Sequence 15, Application US/08918288

Patent No. 6238890

GENERAL INFORMATION:

APPLICANT: Boime, Irving

APPLICANT: Moyle, William R.

TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE

TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET

NUMBER OF SEQUENCES: 83

CORRESPONDENCE ADDRESS:

ADDRESSEE: MORRISON & FOERSTER

STREET: 2000 Pennsylvania Avenue, NW, suite 5500

CITY: Washington

STATE: DC

COUNTRY: USA

ZIP: 20006-1888

COMPUTER READABLE FORM:

MEDIUM TYPE: Diskette

COMPUTER: IBM Compatible

OPERATING SYSTEM: DOS

SOFTWARE: FastSeq for Windows Version 2.0

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/918.288

FILING DATE:

CLASSIFICATION:

PRIOR APPLICATION DATA:

APPLICATION NUMBER: 09/282.357

FILING DATE:

APPLICATION NUMBER: 08/853.524

FILING DATE: 09-MAY-1997

APPLICATION NUMBER: 08/199.382

FILING DATE: 18-FEB-1994

ATTORNEY/AGENT INFORMATION:

NAME: Murrashige, Kate H



REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELEPHONE: 202-687-1500  
TELEFAX: 202-687-0763  
TELEX:  
INFORMATION FOR SEQ ID NO: 15:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 237 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
MOLECULE TYPE: linear  
TOPOLOGY: linear  
FRAGMENT TYPE: Internal  
US-09-813-288-15

Query Match  
Best Local Similarity 82.6%; Pred. No. 2.9e-43;  
Matches 100; Conservative 3; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTVRLQVLPALPOVVCNMR 61  
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTVRLQVLPALPOVVCNMR 80

QY 62 DVFESIRLPCPGVNPVYVALSCCALCSDSDTCTVRLGLPSTCSFGMEKGGSG 121  
DB 81 DVFESIRLPCPGVNPVYVALSCCALCSDSDTCTVRLGLPSTCSFGMEKGGSG 140

QY 122 S 122  
DB 141 S 141

RESULT 47  
US-09-813-357-15  
SEQUENCE 15, Application US/09282357  
PATENT NO. 6242580  
GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESS: MORRISON & FOERSTER  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FastSeq for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/282,357  
FILING DATE: 09-05-1997  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/918,288  
FILING DATE: 25 AUG-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELEPHONE: 202-687-1500  
TELEFAX: 202-687-0763

TELEX:  
INFORMATION FOR SEQ ID NO: 15:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 237 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
MOLECULE TYPE: linear  
TOPOLOGY: linear  
FRAGMENT TYPE: Internal  
US-09-813-357-15

Query Match  
Best Local Similarity 82.6%; Pred. No. 2.9e-43;  
Matches 100; Conservative 3; Mismatches 18; Indels 0; Gaps 0;

QY 2 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTVRLQVLPALPOVVCNMR 61  
DB 21 SKEPLRPRCPINATLAVEKEGCPVCITVTTCAGYCTPTMTVRLQVLPALPOVVCNMR 80

QY 62 DVFESIRLPCPGVNPVYVALSCCALCSDSDTCTVRLGLPSTCSFGMEKGGSG 121  
DB 81 DVFESIRLPCPGVNPVYVALSCCALCSDSDTCTVRLGLPSTCSFGMEKGGSG 140

QY 122 S 122  
DB 141 S 141

RESULT 48  
US-08-425-673-8  
SEQUENCE 8, Application US/08425673  
PATENT NO. 5508261  
GENERAL INFORMATION:  
APPLICANT: Moyle, William R.  
TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having  
NUMBER OF SEQUENCES: 12  
CORRESPONDENCE ADDRESS:  
ADDRESS: Richard R. Muccino  
CITY: Princeton  
STATE: New Jersey  
COUNTRY: USA  
ZIP: 08551  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC Compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/425,673  
FILING DATE:  
CLASSIFICATION: 514  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/717,151  
FILING DATE: 18-JUN-1991  
ATTORNEY/AGENT INFORMATION:  
NAME: Muccino, Richard R.  
REGISTRATION NUMBER: 32,538  
REFERENCE/DOCKET NUMBER: UMD 1.0-004  
TELEPHONE: (609) 466-3407  
TELEFAX: (609) 466-2760  
INFORMATION FOR SEQ ID NO: 8:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 114 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: peptide  
HYPOTHETICAL: NO  
ANTI-SENSE: NO

US-08-425-673-8

Query Match  
Best Local Similarity 95.0%; Pred. No. 7, 9e-43; Length 114;  
Matches 95; Conservative 0; Indels 0; Gaps 0;

QY 2 SKEPLPRCRPINATLAVESGCPVCTITTCAGCYPTMTVRLOGVLPALPQVCNKR 61  
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  
DB 1 SKEPLPRCRPINATLAVESGCPVCTITTCAGCYPTMTVRLOGVLPALPQVCNKR 60  
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

QY 62 DVRFESTIRLPCCPGNVVSVYVALSCCALCRSTTDC 101  
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  
DB 61 DVRFESTIRLPCCPGNVVSVYVALSCCALCZSDSDDC 100  
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

RESULT 49  
US-08-709-924-23  
Sequence 23, Application US/08709924  
Patent No. 5968513  
GENERAL INFORMATION:  
APPLICANT: Gallo, Robert C.  
INVENTOR: Gallo, Robert C.  
TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS  
BY ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN  
NUMBER OF SEQUENCES: 26  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Pennie & Edmonds  
STREET: 1155 Avenue of the Americas  
CITY: New York  
STATE: New York  
COUNTRY: USA  
ZIP: 10036-2711  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
OPERATING SYSTEM: IBM PC compatible  
SOFTWARE: Patentin Release #1.0, Version #1.30  
CURRENT APPLICATION DATA: 08/709,924  
FILING DATE: 09-SEP-1996  
CLASSIFICATION: 514  
ATTORNEY/AGENT INFORMATION:  
NAME: Mistrick, S. Leslie  
REGISTRATION NUMBER: 18,872  
REFERENCE/DOCKET NUMBER: 8769-018  
TELEPHONE: (212) 869-9741/8864  
TELEX: 66141 PENNIE  
INFORMATION FOR SEQ ID NO: 23:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 98 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: peptide  
US-08-709-924-23

Query Match  
Best Local Similarity 95.0%; Pred. No. 7, 9e-42; Length 98;  
Matches 92; Conservative 0; Indels 0; Gaps 0;

QY 49 VLPAIPQVCNRYDRVFESTIRLPCCPGNVVSVYVALSCCALCRSTTDCGGPKDHP 108  
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  
DB 1 VLPAIPQVCNRYDRVFESTIRLPCCPGNLPPVSVYVALSCCALCRSTTDCGGPKDHP 60  
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

QY 109 LTCDDPRFDSSSKAPPSPSLRPGSDT 141  
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  
DB 61 LTCDDPRFDSSSKAPPSPSLRPGSDT 93  
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

RESULT 50  
US-08-709-925-23  
Sequence 23, Application US/08709948  
Patent No. 6319504  
GENERAL INFORMATION:  
APPLICANT: Gallo, Robert C.  
INVENTOR: Bryant, Joseph  
TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION  
BY ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN  
NUMBER OF SEQUENCES: 26  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Pennie & Edmonds LLP  
STREET: 1155 Avenue of the Americas  
CITY: New York  
STATE: New York  
COUNTRY: USA  
ZIP: 10036-2711  
COMPUTER READABLE FORM:

MEDIUM TYPE: floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE RELEASE: Release #1.0, Version #1.30  
CURRENT APPLICATION NUMBER: US/08/709,948  
FILING DATE: 09-SEP-1996  
CLASSIFICATION: 424  
ATTORNEY/AGENT INFORMATION:  
NAME: Mirock, S. Leslie  
REGISTRATION NUMBER: 18-872  
REFERENCE/DOCKET NUMBER: 8769-016  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (212) 790-9090  
TELEFAX: (212) 869-9741/8864  
INFORMATION FOR SEQ ID NO: 23:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 98 amino acids  
TYPE: amino acid  
STRANDEDNESS: linear  
MOLECULE TYPE: peptide  
US-08-709-948-23

Query Match  
Best Local Similarity 65.5%; Score 509; DB 4; Length 98;  
Matches 92; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 49 VLPALPOVYCNRYDVFESIRLPGCPGVNPNVYAVALSQCALCPSTTDCGGPKDP 108  
DB 1 VLPALPOVYCNRYDVFESIRLPGCPGVNPNVYAVALSQCALCPSTTDCGGPKDP 60

OY 109 LTCDDPFDQSSSKAPPSLPSPRLPGPSDT 141  
DB 61 LTCDDPFDQSSSKAPPSLPSPRLPGPSDT 93

RESULT 52  
US-08-918-288-70  
Sequence 70, Application US/08918288  
Patent No. 6238590  
GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESS: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSEQ for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/918,288  
FILING DATE: 25 AUG-1997  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/918,288  
FILING DATE: 25 AUG-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:  
INFORMATION FOR SEQ ID NO: 70:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 93 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLGY: linear

REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:  
INFORMATION FOR SEQ ID NO: 70:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 93 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-918-288-70

Query Match  
Best Local Similarity 65.3%; Score 507; DB 4; Length 93;  
Matches 93; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 2 SKEPLRCPRTNATLAVEKGCPCVITVTITICAGTCPTNTRVLOGVLPALPOVYCNTR 61  
DB 1 SKEPLRCPRTNATLAVEKGCPCVITVTITICAGTCPTNTRVLOGVLPALPOVYCNTR 60

OY 62 DVRESIRLPGCPGVNPNVYAVALSQCALC 94  
DB 61 DVRESIRLPGCPGVNPNVYAVALSQCALC 93

RESULT 53  
US-09-282-357-70  
Sequence 70, Application US/09282357  
Patent No. 6242580  
GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESS: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSEQ for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/282,357  
FILING DATE:  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/918,288  
FILING DATE: 25 AUG-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:  
INFORMATION FOR SEQ ID NO: 70:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 93 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear

US-09-282-357-70

Query Match 65.3%; Score 507; DB 4; Length 93;  
 Best Local Similarity 100.0%; Pred. No. 1e-41;  
 Matches 93; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 2 SKEPLRCRPNATLAVKEGCPVITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 61  
 DB 1 SKEPLRCRPNATLAVKEGCPVITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 60  
 QY 62 DVRFESIRLPCPGVNVVSVYAVALSQCQALC 94  
 DB 61 DVRFESIRLPCPGVNVVSVYAVALSQCQALC 93

RESULT 54  
 US-08-425-673-12  
 : Sequence 12, Application US/08425673  
 : Patent No. 5508261  
 : GENERAL INFORMATION:  
 : APPLICANT: Moyle, William R.  
 : APPLICANT: Campbell, Robert K.  
 : TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having  
 : TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and  
 : TITLE OF INVENTION: Methods For Preparing and Using Same  
 : NUMBER OF SEQUENCES: 12  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESSEE: Richard R. Muccino  
 : STREET: P.O. Box 1367  
 : CITY: Princeton  
 : STATE: New Jersey  
 : COUNTRY: USA  
 : ZIP: 08551  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Floppy disk  
 : OPERATING SYSTEM: DOS/MS-DOS  
 : SOFTWARE: Patent in Release #1.0, Version #1.25  
 : CURRENT APPLICATION DATA:  
 : APPLICATION NUMBER: US/08/425,673  
 : FILING DATE:  
 : CLASSIFICATION: 514  
 : PRIOR APPLICATION DATA:  
 : APPLICATION NUMBER: US 07/717,151  
 : FILING DATE: 18-JUN-1991  
 : ATTORNEY/AGENT INFORMATION:  
 : NAME: Muccino, Richard R.  
 : REGISTRATION NUMBER: 32,538  
 : TELECOMMUNICATION INFORMATION:  
 : TELEPHONE: (609) 466-3407  
 : TELEFAX: (609) 466-2760  
 : INFORMATION FOR SEQ ID NO: 12:  
 : SEQUENCE CHARACTERISTICS:  
 : LENGTH: 117 amino acids  
 : TYPE: amino acid  
 : TOPOLOGY: linear  
 : MOLECULE TYPE: peptide  
 : HYDROTHERMAL: NO  
 : AMINO ACIDS: NO  
 : US-08-425-673-12

Query Match 64.1%; Score 498; DB 1; Length 117;  
 Best Local Similarity 91.0%; Pred. No. 9.7e-41;  
 Matches 91; Conservative 2; Mismatches 7; Indels 0; Gaps 0;  
 QY 2 SKEPLRCRPNATLAVKEGCPVITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 61  
 DB 1 SKEPLRCRPNATLAVKEGCPVITVTTCAGYCPMTVRVLOGVLPALPQVVCNVR 60  
 QY 62 DVRFESIRLPCPGVNVVSVYAVALSQCQALCRRTDC 101  
 DB 61 DVRFESIRLPCPGVNVVSVYAVALSCKCKGCDYDSDC 100

RESULT 55  
 US-08-327-362-2  
 : Sequence 2, Application US/08327362  
 : Patent No. 5812459  
 : GENERAL INFORMATION:  
 : APPLICANT: William D. Odell, Jeanine T. Griffin, Sanjeev  
 : APPLICANT: Grover, Omar Caticha, Douglas T. Carrell,  
 : APPLICANT: Marion L. Woods  
 : TITLE OF INVENTION: Control of Infectious Microorganisms  
 : TITLE OF INVENTION: by Modulation of Choriionic  
 : TITLE OF INVENTION: Gonadotropin-Related Protein  
 : TITLE OF INVENTION: Activity  
 : NUMBER OF SEQUENCES: 5  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESSEE: Thorpe, No. 5811249th & Western  
 : CITY: Sandy  
 : STATE: Utah  
 : COUNTRY: USA  
 : ZIP: 84070  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Diskette, 3.5 inch, 720 Kb storage  
 : OPERATING SYSTEM: DOS 6.1  
 : SOFTWARE: Auto Select 5.1  
 : CURRENT APPLICATION DATA:  
 : APPLICATION NUMBER: US/08/327,362  
 : FILING DATE:  
 : CLASSIFICATION: 435  
 : PRIOR APPLICATION DATA:  
 : APPLICATION NUMBER:  
 : FILING DATE:  
 : ATTORNEY/AGENT INFORMATION:  
 : NAME: Alan J. Howarth  
 : REGISTRATION NUMBER: 36,553  
 : TELECOMMUNICATION INFORMATION:  
 : TELEPHONE: (801)566-6633  
 : TELEFAX: (801)566-0750  
 : INFORMATION FOR SEQ ID NO: 2:  
 : SEQUENCE CHARACTERISTICS:  
 : LENGTH: 88 amino acids  
 : TYPE: amino acid  
 : TOPOLOGY: linear  
 : MOLECULE TYPE: protein  
 : ORIGINAL SOURCE:  
 : ORGANISM: Homo sapiens  
 : US-08-327-362-2

Query Match 62.8%; Score 488; DB 2; Length 88;  
 Best Local Similarity 100.0%; Pred. No. 6.4e-40;  
 Matches 88; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 53 LPQVVCNVRDVFESIRLPCPGVNVVSVYAVALSQCQALCRRTDCGKPHPLTCD 112  
 DB 1 LPQVVCNVRDVFESIRLPCPGVNVVSVYAVALSQCQALCRRTDCGKPHPLTCD 60  
 QY 113 DPFQSSSSSKAPPSLPSPRLQPSD 140  
 DB 61 DPFQSSSSSKAPPSLPSPRLQPSD 88

RESULT 56  
 US-09-158-565-2  
 : Sequence 2, Application US/09158565  
 : Patent No. 6139839  
 : GENERAL INFORMATION:  
 : APPLICANT: Odell, William D.  
 : APPLICANT: Griffin, Jeanine T.  
 : APPLICANT: Grover, Sanjeev  
 : APPLICANT: Caticha, Omar

APPLICANT: Carrell, Douglas T.  
APPLICANT: Woods, II, M. L.  
TITLE OF INVENTION: Control of Infectious Microorganisms by Modulation of  
FILE REFERENCE: T1893.DIV  
CURRENT APPLICATION NUMBER: US/09/158,565  
EARLIER FILING DATE: 1998-09-22  
EARLIER APPLICATION NUMBER: US 08/327,362  
NUMBER OF SEQ ID NOS: 5  
SOFTWARE: WordPerfect 8.0  
SEQ ID NO 2  
LENGTH: 88  
INDELS: 0  
MISMATCHES: 0  
ORGANISM: Homo sapiens  
US-09-158-565-2

Query Match 62.8%; Score 488; DB 4; Length 88;  
Best Local Similarity 100.0%; Pred. No. 6.4e-40;  
Matches 88; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 53 LPQVYCNEDVFESIRLPCGPGVNVYAVALSQCACLCRRSTTDCGGPKDHPPLTCD 112  
DB 1 LPQVYCNEDVFESIRLPCGPGVNVYAVALSQCACLCRRSTTDCGGPKDHPPLTCD 60

QY 113 DPFQDSSSKAPPSLPSPRLPGSD 140  
DB 61 DPFQDSSSKAPPSLPSPRLPGSD 88

RESULT 57  
US-08-709-924-24  
; Sequence 24, Application US/08/09924  
; Patent No. 5968513  
; GENERAL INFORMATION:  
; APPLICANT: Gallo, Robert C.  
; APPLICANT: Bryant, Joseph  
; APPLICANT: Lunardi-Iskandar, Yanto  
; TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS  
; TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN  
; NUMBER OF SEQUENCES: 26  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Pennie & Edmonds  
; STREET: 1155 Avenue of the Americas  
; CITY: New York  
; STATE: New York  
; COUNTRY: USA  
; ZIP: 10036-2711  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; OPERATING SYSTEM: IBM PC compatible  
; SOFTWARE: Patent In Release #1.0, Version #1.30  
; APPLICATION NUMBER: US/08/709,924  
; FILING DATE: 09-SEP-1996  
; CLASSIFICATION: 514  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Misrock, S. Leslie  
; REGISTRATION NUMBER: 18,872  
; REFERENCE/DOCKET NUMBER: 8769-018  
; TELEPHONE: (212) 790-9090  
; TELEFAX: (212) 869-9741/8864  
; INFORMATION CHARACTERISTICS:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 88 amino acids  
; TYPE: amino acid  
; TOPOLOGY: linear  
; MOLECULE TYPE: peptide  
US-08-709-924-24

Query Match 62.8%; Score 488; DB 4; Length 88;  
Best Local Similarity 100.0%; Pred. No. 6.4e-40;  
Matches 88; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 53 LPQVYCNEDVFESIRLPCGPGVNVYAVALSQCACLCRRSTTDCGGPKDHPPLTCD 112  
DB 1 LPQVYCNEDVFESIRLPCGPGVNVYAVALSQCACLCRRSTTDCGGPKDHPPLTCD 60

QY 113 DPFQDSSSKAPPSLPSPRLPGSD 140  
DB 61 DPFQDSSSKAPPSLPSPRLPGSD 88

RESULT 57  
US-08-709-924-24  
; Sequence 24, Application US/08/09924  
; Patent No. 5968513  
; GENERAL INFORMATION:  
; APPLICANT: Gallo, Robert C.  
; APPLICANT: Bryant, Joseph  
; APPLICANT: Lunardi-Iskandar, Yanto  
; TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS  
; TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN  
; NUMBER OF SEQUENCES: 26  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Pennie & Edmonds  
; STREET: 1155 Avenue of the Americas  
; CITY: New York  
; STATE: New York  
; COUNTRY: USA  
; ZIP: 10036-2711  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; OPERATING SYSTEM: IBM PC compatible  
; SOFTWARE: Patent In Release #1.0, Version #1.30  
; APPLICATION NUMBER: US/08/709,924  
; FILING DATE: 09-SEP-1996  
; CLASSIFICATION: 514  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Misrock, S. Leslie  
; REGISTRATION NUMBER: 18,872  
; REFERENCE/DOCKET NUMBER: 8769-018  
; TELEPHONE: (212) 790-9090  
; TELEFAX: (212) 869-9741/8864  
; INFORMATION FOR SEQ ID NO: 24:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 88 amino acids  
; TYPE: amino acid  
; TOPOLOGY: linear  
; MOLECULE TYPE: peptide  
US-08-709-924-24

Query Match 58.8%; Score 457; DB 2; Length 88;  
Best Local Similarity 98.8%; Pred. No. 5.8e-37;  
Matches 82; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 59 NYDVRVESIRLPCGPGVNVYAVALSQCACLCRRSTTDCGGPKDHPPLTCDPRQD 118  
DB 1 NYDVRVESIRLPCGPGVNVYAVALSQCACLCRRSTTDCGGPKDHPPLTCDPRQD 60

QY 119 SSSSKAPPSLPSPRLPGSDT 141  
DB 61 SSSSKAPPSLPSPRLPGSDT 83

RESULT 58  
US-08-709-925-24  
; Sequence 24, Application US/08/09925  
; Patent No. 597871  
; GENERAL INFORMATION:  
; APPLICANT: Gallo, Robert C.  
; APPLICANT: Bryant, Joseph  
; APPLICANT: Lunardi-Iskandar, Yanto  
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY  
; TITLE OF INVENTION: ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROP  
; NUMBER OF SEQUENCES: 26  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Pennie & Edmonds LLP  
; STREET: 1155 Avenue of the Americas  
; CITY: New York  
; STATE: New York  
; COUNTRY: USA  
; ZIP: 10036-2711  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; OPERATING SYSTEM: IBM PC compatible  
; SOFTWARE: Patent In Release #1.0, Version #1.30  
; APPLICATION NUMBER: US/08/709,925  
; FILING DATE: 09-SEP-1996  
; CLASSIFICATION: 512  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Misrock, S. Leslie  
; REGISTRATION NUMBER: 18,872  
; REFERENCE/DOCKET NUMBER: 8769-017  
; TELEPHONE: (212) 790-9090  
; TELEFAX: (212) 869-9741/8864  
; INFORMATION CHARACTERISTICS:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 88 amino acids  
; TYPE: amino acid  
; TOPOLOGY: linear  
; MOLECULE TYPE: peptide  
US-08-709-925-24

Query Match 58.8%; Score 457; DB 2; Length 88;  
Best Local Similarity 98.8%; Pred. No. 5.8e-37;  
Matches 82; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 59 NYDVRVESIRLPCGPGVNVYAVALSQCACLCRRSTTDCGGPKDHPPLTCDPRQD 118  
DB 1 NYDVRVESIRLPCGPGVNVYAVALSQCACLCRRSTTDCGGPKDHPPLTCDPRQD 60

QY 119 SSSSKAPPSLPSPRLPGSDT 141  
DB 61 SSSSKAPPSLPSPRLPGSDT 83

RESULT 59  
US-08-709-948-24  
; Sequence 24, Application US/08/09948  
; Patent No. 6319504

```

; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph
; APPLICANT: Lerner, Yanto
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
; TITLE OF INVENTION: BY ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPHIN
; NUMBER OF SEQUENCES: 26
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds LLP
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; TELEPHONE: (212) 661-1111
; FAX: (212) 661-1111
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION NUMBER: US/09/709,948
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 424
; ATTORNEY/AGENT INFORMATION:
; NAME: Misko, S.
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-016
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; TELEX: 66141 PENNIE
; INFORMATION FOR SEQ ID NO: 24:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 88 amino acids
; TYPE: amino acids
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; US-08-709-948-24

Query Match 58.8%; Score 457; DB 4; Length 88;
Best Local Similarity 98.8%; Pred. No. 5.8e-37;
Matches 82; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 59 NYDVPESTRILPCPGVGNVSVAVALSOCALCRSTTDCGGKDHPLTCODPRFOD 118
DB 1 NYDVPESTRILPCPGVGNVSVAVALSOCALCRSTTDCGGKDHPLTCODPRFOD 60

QY 119 SSSSKAPPPSLPSRLPGPSDT 141
DB 61 SSSSKAPPPSLPSRLPGPSDT 83

RESULT 60
US-08-425-673-5
; Sequence 5; Application US/08425673
; Patent No. 508261
; GENERAL INFORMATION:
; APPLICANT: Campbell, Robert K.
; APPLICANT: Campbell, Robert K.
; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
; TITLE OF INVENTION: Methods For Preparing and Using Same
; NUMBER OF SEQUENCES: 12
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Richard R. Muccino
; STREET: P.O. Box 1267
; CITY: Princeton
; STATE: New Jersey
; COUNTRY: USA
; TELEPHONE: (609) 921-1111
; FAX: (609) 921-1111
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible

```

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; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION NUMBER: US/08/425,673
; FILING DATE: 07-JUL-1993
; CLASSIFICATION: 514
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/17,151
; FILING DATE: 18-JUN-1991
; ATTORNEY/AGENT INFORMATION:
; NAME: Muccino, Richard R.
; REGISTRATION NUMBER: 32,538
; REFERENCE/DOCKET NUMBER: OND 1.0-004
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (609) 466-3407
; FAX: (609) 466-3407
; INFORMATION FOR SEQ ID NO: 5:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 149 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; HYPOTHETICAL: NO
; ANTI-SENSE: NO
; US-08-425-673-5

Query Match 57.6%; Score 447.5; DB 1; Length 149;
Best Local Similarity 60.7%; Pred. No. 8.5e-36;
Matches 85; Conservative 15; Mismatches 35; Indels 5; Gaps 2;

QY 2 SKEPLRPCRINATLAVEKGCVCITVTTCAGTCYCTMTVRLQGLPALPVVCHYR 61
DB 1 SRGLPLRCPINATLAAEKEACPICTTTSICAGTCYCPMVRNPAALPAIPVCTYR 60

QY 62 DVPESIRLPCPGVGNVSVAVALSOCALCRSTTDCGGKDHPLTCODPRFODSSS 121
DB 61 ELNFASIRLPCPGVGNVSVAVALSOCALCRSTTDCGGKDHPLTCODPRFODSSS 117

QY 122 SKAPP--PSLPSRLPGPS 139
DB 118 SKAPP--PSLPSRLPGPS 137

RESULT 61
US-08-086-915-14
; Sequence 14; Application US/08086915
; Patent No. 444167
; GENERAL INFORMATION:
; APPLICANT: Peterson, Kim ST
; TITLE OF INVENTION: Variant Luteinizing Hormone Encoding DNA
; NUMBER OF SEQUENCES: 17
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Adduci, Mastriani, Schaumburg & Schill
; STREET: 1140 Connecticut Avenue, N.W., Suite 250
; CITY: Washington
; STATE: D.C.
; COUNTRY: U.S.A.
; ZIP: 20036
; TELEPHONE: (202) 462-1111
; FAX: (202) 462-1111
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION NUMBER: US/08/086,915
; FILING DATE: 07-JUL-1993
; CLASSIFICATION: 536
; ATTORNEY/AGENT INFORMATION:
; NAME: Kuboveck, Ronald J.
; REGISTRATION NUMBER: 25,401
; REFERENCE/DOCKET NUMBER: 15873005
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-467-6300

```

TELEFAX: 202-466-2006  
 INFORMATION FOR SEQ ID NO: 14:  
 SEQUENCE CHARACTERISTICS:  
 LENGTH: 46 amino acids  
 TYPE: amino acid  
 STRANDEDNESS: single  
 TOPOLOGY: linear  
 MOLECULE TYPE: protein  
 HYPOTHETICAL: NO  
 ORGANISM: Homo sapiens  
 FEATURE:  
 NAME/KEY: Modified-site  
 LOCATION: 13  
 OTHER INFORMATION: /note= "The asparagine at position 13 is linked to an oligosaccharide."  
 NAME/KEY: Modified-site  
 LOCATION: 30  
 OTHER INFORMATION: /note= "The asparagine at position 30 is linked to an oligosaccharide."  
 US-08-086-915-14

Query Match 29.5%; Score 229; DB 1; Length 46;  
 Best Local Similarity 100.0%; Pred. No. 1.7e-15;  
 Matches 41; Conservative 0; Mismatches 0; Indels 0; Caps 0;  
 Oy 2 STEPLRPRCPINATLAVKEGCPVITNTTICAGYCPTM 42  
 Db 6 STEPLRPRCPINATLAVKEGCPVITNTTICAGYCPTM 46

RESULT 62  
 US-08-918-288-74  
 : Sequence 74, Application US/08918288  
 : Patent No. 6238890  
 : GENERAL INFORMATION:  
 : APPLICANT: BOEHE, Irving  
 : APPLICANT: BOEHE, William R.  
 : TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
 : TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
 : NUMBER OF SEQUENCES: 83  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESSEE: MORRISON & FOERSTER  
 : STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
 : CITY: Washington  
 : STATE: DC  
 : COUNTRY: USA  
 : ZIP: 20006-1898  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Diskette  
 : COMPUTER: IBM Compatible  
 : OPERATING SYSTEM: DOS  
 : SOFTWARE: FastSeq for Windows Version 2.0  
 : CURRENT APPLICATION DATA:  
 : APPLICATION NUMBER: US/08/918,288  
 : FILING DATE:  
 : CLASSIFICATION:  
 : PRIOR APPLICATION DATA:  
 : APPLICATION NUMBER: 09/282,357  
 : FILING DATE: 09-AUG-1997  
 : APPLICATION NUMBER: 08/853,524  
 : FILING DATE: 09-MAY-1997  
 : APPLICATION NUMBER: 08/199,382  
 : FILING DATE: 18-FEB-1994  
 : ATTORNEY/AGENT INFORMATION:  
 : NAME: Murashige, Kate H  
 : REGISTRATION NUMBER: 29,959  
 : REFERENCE/DOCKET NUMBER: 29500-20050.25  
 : TELECOMMUNICATION INFORMATION:  
 : TELEPHONE: 202-887-1500  
 : TELEFAX: 202-887-0763  
 : INFORMATION FOR SEQ ID NO: 74:  
 : SEQUENCE CHARACTERISTICS:  
 : LENGTH: 104 amino acids  
 : TYPE: amino acid  
 : STRANDEDNESS: single  
 : TOPOLOGY: linear  
 : US-09-282-357-74

SEQUENCE CHARACTERISTICS:  
 LENGTH: 104 amino acids  
 TYPE: amino acid  
 STRANDEDNESS: single  
 TOPOLOGY: linear  
 US-08-918-288-74  
 Query Match 29.3%; Score 228; DB 4; Length 104;  
 Best Local Similarity 43.6%; Pred. No. 5.2e-15;  
 Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;  
 Oy 10 CRPNATLAVKEGCPVITNTTICAGYCPTMTRVLQGLPALPOV--VCNRYDRVFES 67  
 Db 3 CELTNTTIAVEKEGCGCITNTTICAGYCITRDLVTKD--PARPKIQTCTFKELYVET 60  
 Oy 68 IRLPGCPGVNPPVSYAVALSOCALCRRSTTDC 101  
 Db 61 VYVPCNHNHADSITTPVATOCGCGKDSSTDC 94

RESULT 63  
 US-09-282-357-74  
 : Sequence 74, Application US/09282357  
 : Patent No. 6242580  
 : GENERAL INFORMATION:  
 : APPLICANT: BOEHE, Irving  
 : APPLICANT: BOEHE, William R.  
 : TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
 : TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
 : NUMBER OF SEQUENCES: 83  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESSEE: MORRISON & FOERSTER  
 : STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
 : CITY: Washington  
 : STATE: DC  
 : COUNTRY: USA  
 : ZIP: 20006-1898  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Diskette  
 : COMPUTER: IBM Compatible  
 : OPERATING SYSTEM: DOS  
 : SOFTWARE: FastSeq for Windows Version 2.0  
 : CURRENT APPLICATION DATA:  
 : APPLICATION NUMBER: US/09/282,357  
 : FILING DATE:  
 : CLASSIFICATION:  
 : PRIOR APPLICATION DATA:  
 : APPLICATION NUMBER: 08/918,288  
 : FILING DATE: 09-AUG-1997  
 : APPLICATION NUMBER: 08/853,524  
 : FILING DATE: 09-MAY-1997  
 : APPLICATION NUMBER: 08/199,382  
 : FILING DATE: 18-FEB-1994  
 : ATTORNEY/AGENT INFORMATION:  
 : NAME: Murashige, Kate H  
 : REGISTRATION NUMBER: 29,959  
 : REFERENCE/DOCKET NUMBER: 29500-20050.25  
 : TELECOMMUNICATION INFORMATION:  
 : TELEPHONE: 202-887-1500  
 : TELEFAX: 202-887-0763  
 : INFORMATION FOR SEQ ID NO: 74:  
 : SEQUENCE CHARACTERISTICS:  
 : LENGTH: 104 amino acids  
 : TYPE: amino acid  
 : STRANDEDNESS: single  
 : TOPOLOGY: linear  
 : US-09-282-357-74

Query Match 29.3%; Score 228; DB 4; Length 104;  
 Best Local Similarity 43.6%; Pred. No. 5.2e-15;  
 Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;

	QY	10	CRPYNATLAVEKECPVCITNTTICAGVPTWTRVGVLPAPOV--VCNTRDVRFS	67
	Db	3	CELTNIIVIIIEKECGCFITNTMCAGCTITRDLYKDD--PARPKIQTCTFKELVIET	60
	QY	68	IRLPCCPGVNPVVTVAYALSCCALCRSTTDC	101
	Db	61	VRRPGCAHLSLYTTPVATOCGCKGCDSDTDC	94

RESULT 64  
US-08-918-288-73  
Sequence 73, Application US/08918288  
Patent No. 6238890  
GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
APPLICANT: MOYLE, William R.  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
INVENTOR: MOYLE, William R.  
CORRESPONDENCE ADDRESS: 83  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500

CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: EASYSEQ Windows Version 2.0  
CURRENT APPLICATION DATA:  
FILING DATE: US/08/918,288  
CLASSIFICATION:  
PRIOR APPLICATION NUMBER: 09/282,357  
FILING DATE:  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
ATTORNEY/AGENT INFORMATION:  
NAME: Mueshling, Kath H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:  
INFORMATION FOR SEQ ID NO: 73:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 108 amino acids  
REFERENCE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-918-288-73

Query Match 29.3%; Score 228; DB 4; Length 108;  
Best Local Similarity 43.6%; Pred. No. 5.4e-15;  
Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;

QY	10	CRPNATLAVEKGCPCVCTVTTTCAGTCPTMTVLQGVLPALPQV--VCNTRVRFES	67
DB	3	CELTNIITIAVEKGCFCFTINTWAGCYTTRDLVYKD--PARPKIQKTCTFKELVIET	60
QY	68	IRLPGCPGVNPVYSTVALVSCQALCRRSTTDC	101
DB	61	VVRPCAHADSLVTVTVATCAGCGCNSDSDC	94

RESULT 65  
US-09-282-357-73

Sequence 73, Application US/092823157  
PATENT NO. 624280  
GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
APPLICANT: MOYLE, William R.  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLUCOPROTEIN HORMONE QUARTET  
SEQUENCE NO. 83  
CORRESPONDING ADDRESS:  
ADDRESSEE: MORRISON & FORSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500

CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20005-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
SOFTWARE: MS DOS  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/282.357

CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
FILING DATE: 08/918,288  
FILING DATE: 35 AUG-1997  
APPLICATION NUMBER: 08/053,524  
FILING DATE: 08/053,524  
APPLICATION NUMBER: 08/219,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 867-1500  
FAX: 867-1500

TELEPHONE: 202-667-0703  
 INFORMATION FOR SEQ ID NO: 73:  
 SEQUENCE CHARACTERISTICS:  
 LENGTH: 108 amino acids  
 TYPE: amino acid  
 STRANDEDNESS: single  
 TOPOLOGY: linear  
 US-09-282-357-73

Query Match 29.3%; Score 228; DB 4; Length 108;  
Best Local Similarity 43.6%; Pred. No. 5.4e-15;  
Matches 41: Conservative 17; Mismatches 32; Indels 4; Gaps 2;

10 CRP NAT LAVEKEGCPVCTVTNTTCAGYCGPTMTIRVLQGVLPALPQV--VCNYRDVRFEES 67  
| | : ||||| ||| ||| ||| ||| : ||| : | : : : | :  
3 CEI TNIT LAVEKEGGFCITINTWCAGYCVTRDLVYKD--PARPKLTKTCFEKL VET 60

68 IRLPGCPRGVNPVVSVAVALSCQCALCRRSTTDC 101  
:|:|:| : : :|:| :|:|  
61 VRVPGCAHHAQSLVTPVATQCHGCKDSDSTDC 94

RESULT 66  
TS-08-918-288-72

US-08-918-288-72  
 : Sequence 72, Application US/08918288  
 : Patent No. 6238890  
 : GENERAL INFORMATION:  
 :  
 : APPLICANT: BOYLE, William  
 : APPLICANT: BOYLE, William R.  
 : TITLE OF INVENTION: SINGLE-CHAIN  
 : TITLE OF INVENTION: GLYCOPROTEIN  
 : NUMBER OF SEQUENCES: 83  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESSEE: MORRISON & FOERSTER  
 : STREET: 2000 Pennsylvania Avenue

CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500



CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSEQ for Windows Version 2.0  
CURRENT APPLICATION DATA: 09/08/918,288  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:  
INFORMATION FOR SEQ ID NO: 72:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 111 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-918-288-72

Query Match 29.3%; Score 228; DB 4; Length 111;  
Best Local Similarity 43.6%; Pred. No. 5.6e-15;  
Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;

OY 10 CRPINALAVEKGGPCVITNTTICAGCTPTMRVLOGLVLPALQV--VCNRYDVRFS 67  
DB 3 CELTNTIIVAEKGGCGCTITNTTICAGCTPTMRVLOGLVLPALQV--VCNRYDVRFS 67  
OY 68 IRLPCCPRGVNPNVSVYVALSCQCALCRSTTDC 101  
DB 61 VRYPCARHADSLYTPVATOCRCCKGSDSDTC 94

RESULT 67  
US-09-282-357-72  
Sequence 72; Application US/09282357  
Patent No. 5508261  
GENERAL INFORMATION:  
APPLICANT: Boyle, Irving  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSEQ for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/282,357

FILING DATE: 536  
PRIOR APPLICATION DATA: 09/018,288  
PATENT NO. 5508261  
FILING DATE: 20-AUG-1991  
APPLICATION NUMBER: 08/653,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:  
INFORMATION FOR SEQ ID NO: 72:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 111 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-09-282-357-72

Query Match 29.3%; Score 228; DB 4; Length 111;  
Best Local Similarity 43.6%; Pred. No. 5.6e-15;  
Matches 41; Conservative 17; Mismatches 32; Indels 4; Gaps 2;

OY 10 CRPINALAVEKGGPCVITNTTICAGCTPTMRVLOGLVLPALQV--VCNRYDVRFS 67  
DB 3 CELTNTIIVAEKGGCGCTITNTTICAGCTPTMRVLOGLVLPALQV--VCNRYDVRFS 67  
OY 68 IRLPCCPRGVNPNVSVYVALSCQCALCRSTTDC 101  
DB 61 VRYPCARHADSLYTPVATOCRCCKGSDSDTC 94

RESULT 68  
US-08-425-673-6  
Sequence 6; Application US/08425673  
Patent No. 5508261  
GENERAL INFORMATION:  
APPLICANT: Moyle, William R.  
TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having  
TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and  
TITLE OF INVENTION: Methods for Preparing and Using Same  
NUMBER OF SEQUENCES: 12  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Richard R. Muccino  
STREET: P.O. Box 1267  
CITY: Princeton  
STATE: New Jersey  
COUNTRY: USA  
ZIP: 08551  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC DOS/MS-DOS  
SOFTWARE: PATENTIN Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/425,673  
FILING DATE:  
CLASSIFICATION: 514  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/717,151  
FILING DATE: 18-JUN-1991  
ATTORNEY/AGENT INFORMATION:  
NAME: Muccino, Richard R.  
REGISTRATION NUMBER: 32,538  
REFERENCE/DOCKET NUMBER: 08/1.0-004  
TELECOMMUNICATION INFORMATION:

```

? TELEPHONE: (609) 466-3407
? TELEFAX: (609) 466-2760
? INFORMATION FOR SEQ ID NO: 6:
? SEQUENCE CHARACTERISTICS:
? LENGTH: 112 amino acids
? TYPE: amino acid
? TOPOLOGY: linear
? MOLECULE TYPE: peptide
? HYPOTHETICAL: NO
? ANTI-SENSE: NO
US-08-425-673-6

Query Match 28.8%; Score 224; DB 1; Length 112;
Best Local Similarity 46.9%; Pred. No. 1.4e-14;
Matches 45; Conservative 11; Mismatches 34; Indels 6; Gaps 3;

QY 10 CRPINATLAVKEGCGVCTVNTTICAGYCTPTMTVLGVLGVPALPOV--VCHYDVRFES 65
DB 2 CIPTETWHTIERECAYCLTINTTICAGY--WTRDINGKLEPKYALSQDVCTYRDFY 59
QY 66 ESIRLPGCGVGNVYVAVALSQCQALCRRTTDC 101
DB 60 RTVEIPOCLHVAHYFSPYVLSCKGCKDYSDC 95

RESULT 69
US-09-813-288-27
? Sequence 27, Application US/08918288
? Patent No. 6238890
? GENERAL INFORMATION:
? APPLICANT: BOIME, Irving
? TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
? TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
? NUMBER OF SEQUENCES: 83
? CORRESPONDENCE ADDRESS:
? ADDRESSES: FORESTER
? STREET: 2000 Pennsylvania Avenue, NW, suite 5500
? CITY: Washington
? STATE: DC
? COUNTRY: USA
? ZIP: 20006-1888
? COMPUTER READABLE FORM:
? MEDIUM TYPE: Diskette
? COMPUTER: IBM Compatible
? OPERATING SYSTEM: DOS
? SOFTWARE: FASTSEQ for Windows Version 2.0
? CURRENT APPLICATION DATA:
? APPLICATION NUMBER: US/08/918,288
? FILING DATE:
? CLASSIFICATION:
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 09/282,357
? FILING DATE:
? APPLICATION NUMBER: 08/853,524
? FILING DATE: 09-MAY-1997
? APPLICATION NUMBER: 08/199,382
? FILING DATE: 18-FEB-1994
? ATTORNEY/AGENT INFORMATION:
? NAME: MURASHIGE, Kate H
? REGISTRATION NUMBER: 29,959
? REFERENCE/DOCKET NUMBER: 29500-20050.25
? TELECOMMUNICATION INFORMATION:
? TELEPHONE: 202-887-1500
? TELEFAX: 202-887-0763
? TELEX:
? INFORMATION FOR SEQ ID NO: 27:
? SEQUENCE CHARACTERISTICS:
? LENGTH: 223 amino acids
? TYPE: amino acid
? TOPOLOGY: linear
? STRANDEDNESS: single
? MOLECULE TYPE: protein
? HYPOTHETICAL: NO
? ANTI-SENSE: NO
US-09-282-357-27

Query Match 28.6%; Score 222; DB 4; Length 223;
Best Local Similarity 37.3%; Pred. No. 4.6e-14;
Matches 44; Conservative 19; Mismatches 51; Indels 4; Gaps 2;

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? FRAGMENT TYPE: Internal
US-08-918-288-27

Query Match 28.6%; Score 222; DB 4; Length 223;
Best Local Similarity 37.3%; Pred. No. 4.6e-14;
Matches 44; Conservative 19; Mismatches 51; Indels 4; Gaps 2;

QY 10 CRPINATLAVKEGCGVCTVNTTICAGYCTPTMTVLGVLGVPALPOV--VCHYDVRFES 67
DB 21 CELTNITIAIEKEECRCFCSINTTICAGYCTPTMTVLGVLGVPALPOV--PARPKIKTCTCFKELVYET 78
QY 68 IRLPGCGVGNVYVAVALSQCQALCRRTTDCGPKDHLTCDDPRFQSSSKAP 125
DB 79 VRVPGCAHADSLLTYPVATGCHGCKDCSDSTDCVTRGLGPGSYCSFGSGSGSGSAP 136

RESULT 70
US-09-282-357-27
? Sequence 27, Application US/09282357
? Patent No. 6242580
? GENERAL INFORMATION:
? APPLICANT: BOIME, Irving
? TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
? TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
? NUMBER OF SEQUENCES: 83
? CORRESPONDENCE ADDRESS:
? ADDRESSES: FORESTER
? STREET: 2000 Pennsylvania Avenue, NW, suite 5500
? CITY: Washington
? STATE: DC
? COUNTRY: USA
? ZIP: 20006-1888
? COMPUTER READABLE FORM:
? MEDIUM TYPE: Diskette
? COMPUTER: IBM Compatible
? OPERATING SYSTEM: DOS
? SOFTWARE: FASTSEQ for Windows Version 2.0
? CURRENT APPLICATION DATA:
? APPLICATION NUMBER: US/09/282,357
? FILING DATE:
? CLASSIFICATION: 536
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 08/918,288
? FILING DATE: 25 AUG-1997
? APPLICATION NUMBER: 08/853,524
? FILING DATE: 09-MAY-1997
? APPLICATION NUMBER: 08/199,382
? FILING DATE: 18-FEB-1994
? ATTORNEY/AGENT INFORMATION:
? NAME: Murashige, Kate H
? REGISTRATION NUMBER: 29,959
? REFERENCE/DOCKET NUMBER: 29500-20050.25
? TELECOMMUNICATION INFORMATION:
? TELEPHONE: 202-887-1500
? TELEFAX: 202-887-0763
? TELEX:
? INFORMATION FOR SEQ ID NO: 27:
? SEQUENCE CHARACTERISTICS:
? LENGTH: 223 amino acids
? TYPE: amino acid
? TOPOLOGY: linear
? STRANDEDNESS: single
? MOLECULE TYPE: protein
? HYPOTHETICAL: NO
? ANTI-SENSE: NO
US-09-282-357-27

Query Match 28.6%; Score 222; DB 4; Length 223;
Best Local Similarity 37.3%; Pred. No. 4.6e-14;
Matches 44; Conservative 19; Mismatches 51; Indels 4; Gaps 2;
QY 10 CRPINATLAVKEGCGVCTVNTTICAGYCTPTMTVLGVLGVPALPOV--VCHYDVRFES 67

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Db 21 CELTNTTATIEKEECRCISINTTACGYCTRDLYKD--PARPKIQKTCFKELVYET 78  
QY 68 IRLPGCPGVNPNVSVYAVALSOCALCRSTTDCGPKDHLPLTCDPRFQDSSSKAP 125  
Db 79 VVPGCAHADSLLTTPVATQCHCGKCDSDTCTVRLGPGSTCSFGSGSGSGAP 136

## RESULT 71

US-08-086-915-12  
; Sequence 12, Application US/08086915  
; Patent No. 5444167  
; GENERAL INFORMATION:  
; APPLICANT: Petterason, Kim SI  
; TITLE OF INVENTION: Variant Lutetizing Hormone Encoding DNA  
; NUMBER OF SEQUENCES: 17  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Adriaan Matrilani, Schaumburg & Schill  
; STREET: 1140 Connecticut Avenue, N.W., Suite 250  
; CITY: Washington  
; STATE: D.C.  
; COUNTRY: U.S.A.  
; ZIP: 20036  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; COMPUTER: IBM PC compatible  
; OPERATING SYSTEM: PC-DOS/MS-DOS  
; SOFTWARE: FASTSEQ Release #1.0, Version #1.25  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/08/086,915  
; FILING DATE: 07-JUL-1993  
; CLASSIFICATION: 536  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Kubovcik, Ronald J.  
; REGISTRATION NUMBER: 25,401  
; REFERENCE/DOCKET NUMBER: 15873005  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 1002-467-6300  
; TELEFAX: 1002-467-06  
; INFORMATION FOR SEQ ID NO. 12:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 46 amino acids  
; TYPE: amino acid  
; TOPOLOGY: linear  
; MOLECULE TYPE: protein  
; ORIGINAL SOURCE:  
; ORGANISM: Homo sapiens  
US-08-086-915-12

Query Match 28.4%; Score 221; DB 1; Length 46;  
Best Local Similarity 25.1%; Pred. No. 9, 8e-15;  
Matches 39; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 2 SKPLRPRCPINATLAVKEGCPVCITVNTTICAGYCPTM 42  
Db 6 SREPLRCPHPINATLAVKEGCPVCITVNTTICAGYCPTM 46

## RESULT 72

US-08-918-288-12  
; Sequence 12, Application US/08918288  
; Patent No. 6218890  
; GENERAL INFORMATION:  
; APPLICANT: BOIME, Irving  
; APPLICANT: MOYLE, William R.  
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
; NUMBER OF SEQUENCES: 83  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: MORRISON & FOERSTER  
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
; CITY: Washington  
; STATE: DC  
; COUNTRY: USA

ZIP: 20006-1888  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Diskette  
; COMPUTER: IBM Compatible  
; OPERATING SYSTEM: DOS  
; SOFTWARE: FASTSEQ for Windows Version 2.0  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/08/918,288  
; FILING DATE:  
; CLASSIFICATION:  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 09/282,357  
; FILING DATE:  
; APPLICATION NUMBER: 08/853,524  
; FILING DATE: 09-MAY-1997  
; APPLICATION NUMBER: 08/199,382  
; FILING DATE: 14-FEB-1994  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Murshiege, Kate H.  
; REGISTRATION NUMBER: 29,959  
; REFERENCE/DOCKET NUMBER: 29500-20050.25  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: 202-887-1500  
; TELEFAX: 202-887-0763  
; TELEX:  
; INFORMATION FOR SEQ ID NO. 12:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 229 amino acids  
; TYPE: amino acid  
; STRANDEDNESS: single  
; TOPOLOGY: linear  
; MOLECULE TYPE: protein  
; FRAGMENT TYPE: Internal  
US-08-918-288-12

Query Match 28.1%; Score 218; DB 4; Length 229;  
Best Local Similarity 36.5%; Pred. No. 1.1e-13;  
Matches 42; Conservative 21; Mismatches 48; Indels 4; Gaps 2;

QY 10 CRPNATLAVKEGCPVCITVNTTICAGYCPTMTRVLQGLPALQV--VCHYDVRPES 67  
Db 21 CELTNTTATIEKEECRCISINTTACGYCTRDLYKD--PARPKIQKTCFKELVYET 78

QY 68 IRLPGCPGVNPNVSVYAVALSOCALCRSTTDCGPKDHLPLTCDPRFQDSSES 122  
Db 79 VVPGCAHADSLLTTPVATQCHCGKCDSDTCTVRLGPGSTCSFGSGSGSGS 133

## RESULT 73

US-09-282-357-12  
; Sequence 12, Application US/09282357  
; Patent No. 6248890  
; GENERAL INFORMATION:  
; APPLICANT: BOIME, Irving  
; APPLICANT: MOYLE, William R.  
; TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
; NUMBER OF SEQUENCES: 83  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: MORRISON & FOERSTER  
; STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
; CITY: Washington  
; STATE: DC  
; COUNTRY: USA  
; ZIP: 20006-1888  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Diskette  
; COMPUTER: IBM Compatible  
; OPERATING SYSTEM: DOS  
; SOFTWARE: FASTSEQ for Windows Version 2.0  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/09/282,357  
; FILING DATE:

CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/918,288  
FILING DATE: 25 AUG-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX: 202-887-0763  
INFORMATION FOR SEQ ID NO: 12:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 222 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
FRAGMENT TYPE: internal  
US-09-282-357-12

Query Match  
Best Local Similarity 38.1%, Score 218; DB 4; Length 229;  
Matches 42; Conservative 21; Mismatches 48; Indels 4; Gaps 2;

OY 10 CRPINATLAVKEGCPVCITVTTCAGTCPTMTRVLGVLGVPALPOV--VCNRYDVFES 67  
DB 21 CELTNITIAIEKEECRCFISINTWCAGCYTRDLVKD--PARPKIQKTCFELVET 78  
OY 68 IRLPCPRGVNVPVSYAVALSQCACRRSTTDCGGPKDHLPTCDPFRQSSSS 122  
DB 79 VYVPCAHRAUSLTIPTVATQCHCKGKDSSTDTCTVRLGSPSCSTGEMKEGSGS 133

RESULT 74  
US-08-918-288-30  
Sequence 30, Application US/08918288  
Patent No. 6238890  
GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
APPLICANT: MOYLE, William R.  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
OPERATING SYSTEM: IBM Compatible  
SOFTWARE: FASTSEQ for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/918,288  
FILING DATE: 25 AUG-1997  
CLASSIFICATION:  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 09/282,357  
FILING DATE:  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX: 202-887-0763  
INFORMATION FOR SEQ ID NO: 30:  
SEQUENCE CHARACTERISTICS:

NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX: 202-887-0763  
INFORMATION FOR SEQ ID NO: 30:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 222 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
FRAGMENT TYPE: internal  
US-08-918-288-30

Query Match  
Best Local Similarity 37.3%, Score 217; DB 4; Length 222;  
Matches 44; Conservative 19; Mismatches 47; Indels 8; Gaps 3;

OY 10 CRPINATLAVKEGCPVCITVTTCAGTCPTMTRVLGVLGVPALPOV--VCNRYDVFES 67  
DB 21 CELTNITIAIEKEECRCFISINTWCAGCYTRDLVKD--PARPKIQKTCFELVET 78  
OY 68 IRLPCPRGVNVPVSYAVALSQCACRRSTTDCGGPKDHLPTCDPFRQSSSSCAP 125  
DB 79 VYVPCAHRAUSLTIPTVATQCHCKGKDSSTDTCTVRLGSPSCSTGEMKEGSGSNP 132

RESULT 75  
US-09-282-357-30  
Sequence 30, Application US/09282357  
Patent No. 6242580  
GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
APPLICANT: MOYLE, William R.  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
OPERATING SYSTEM: IBM Compatible  
SOFTWARE: FASTSEQ for Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/282,357  
FILING DATE:  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/918,288  
FILING DATE: 25 AUG-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX: 202-887-0763  
INFORMATION FOR SEQ ID NO: 30:  
SEQUENCE CHARACTERISTICS:

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; LENGTH: 222 amino acids
; TYPE: amino acid
; STRANDNESS: single
; MOLECULE TYPE: linear
; MOLECULE TYPE: protein
; FRAGMENT TYPE: internal
; US-09-282-357-30
;
; Query Match
; Best Local Similarity 27.9%; Score 217; DB 4; Length 222;
; Matches 44; Conservative 19; Mismatches 47; Indels 8; Caps 3;
;
; QY 10 CRPNTAVLEKEGCPVCTVNTTICAGCPTMTVRVLOGVLPALPOV--VCNVRDVRFS 67
; DB 21 CELTNITIAIEKEECRCISINTWACGYCTRDLYVKD--PARKIKTKTIFRELIVET 78
; QY 68 IRLPGCPGVNPNVSVAYALSCQALCRRTDTCGGPKDHPGLTCDPRQDSSSKAP 125
; DB 79 VRVPGCAHHAHDSLTPVATOCCHCKGKCDSDTDCITVRGLGPSYCG---SGSGSGSAP 132
;
; RESULT 76
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.; BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION NUMBER: US/07/647,893
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 375,731
; FILING DATE: 20-JUL-1988
; APPLICATION NUMBER: 221,687
; SEQ ID NO: 1
; LENGTH: 45
;
; Query Match
; Best Local Similarity 27.7%; Score 215; DB 6; Length 45;
; Matches 38; Conservative 1; Mismatches 1; Indels 0; Caps 0;
;
; QY 102 GPKDHPGLTCDPRQDSSSKAPPSLPSPRLPSPDT 141
; DB 1 GPKDHPGLTCDPRQDSSSKAPPSLPSPRLPSPDT 40
;
; RESULT 77
; US-08-425-673-3
; Sequence 3, Application US/08425673
; Patent No. 5508261
; GENERAL INFORMATION:
; APPLICANT: Moyle, William R.
; APPLICANT: Campbell, Robert K.
; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
; TITLE OF INVENTION: Methods For Preparing and Using Same
; NUMBER OF SEQUENCES: 12
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Richard R. Muccino
; STREET: P.O. Box 1267
; CITY: Princeton
; STATE: New Jersey
; COUNTRY: USA
; ZIP: 08551
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/425,673
; FILING DATE: 18-JUN-1991
; PRIOR APPLICATION NUMBER: US 07/717,151
; ATTORNEY/AGENT INFORMATION:
; NAME: MUCCINO, Richard R.
; REGISTRATION NUMBER: 32,538
; REFERENCE/DOCKET NUMBER: UMD 1.0-004
; TELEPHONE: (609) 466-3407
; TELEFAX: (609) 466-2760

```

```

; APPLICATION NUMBER: US/08/425,673
; FILING DATE:
; CLASSIFICATION: 514
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/717,151
; FILING DATE: 18-JUN-1991
; ATTORNEY/AGENT INFORMATION:
; NAME: MUCCINO, Richard R.
; REGISTRATION NUMBER: 32,538
; REFERENCE/DOCKET NUMBER: UMD 1.0-004
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (609) 466-3407
; TELEFAX: (609) 466-2760
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 111 amino acids
; MOLECULE TYPE: peptide
; TOPOLOGY: linear
; HYPOTHEICAL: NO
; ANTI-SENSE: NO
; US-08-425-673-3
;
; Query Match
; Best Local Similarity 27.5%; Score 214; DB 1; Length 111;
; Matches 38; Conservative 19; Mismatches 33; Indels 4; Caps 2;
;
; QY 10 CRPNTAVLEKEGCPVCTVNTTICAGCPTMTVRVLOGVLPALPOV--VCNVRDVRFS 67
; DB 3 CELTNITIAIEKEECRCISINTWACGYCTRDLYVKD--PARKIKTKTIFRELIVET 60
; QY 68 IRLPGCPGVNPNVSVAYALSCQALCRRTDTC 101
; DB 61 VRVPGCAHHAHDSLTPVATOCCHCKGKCDSDTDC 94
;
; RESULT 78
; US-08-425-673-4
; Sequence 4, Application US/08425673
; Patent No. 5508261
; GENERAL INFORMATION:
; APPLICANT: Moyle, William R.
; APPLICANT: Campbell, Robert K.
; TITLE OF INVENTION: Analogs of Glycoprotein Hormones Having
; TITLE OF INVENTION: Altered Receptor Binding Specificity and Activity and
; TITLE OF INVENTION: Methods For Preparing and Using Same
; NUMBER OF SEQUENCES: 12
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Richard R. Muccino
; STREET: P.O. Box 1267
; CITY: Princeton
; STATE: New Jersey
; COUNTRY: USA
; ZIP: 08551
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/425,673
; FILING DATE: 18-JUN-1991
; PRIOR APPLICATION NUMBER: US 07/717,151
; ATTORNEY/AGENT INFORMATION:
; NAME: MUCCINO, Richard R.
; REGISTRATION NUMBER: 32,538
; REFERENCE/DOCKET NUMBER: UMD 1.0-004
; TELEPHONE: (609) 466-3407
; TELEFAX: (609) 466-2760

```

INFORMATION FOR SEQ ID NO: 4:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 111 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: peptide  
HYDROPHILIC: NO  
ANTISENSE: NO  
US-08-425-673-4

Query Match 27.5%; Score 214; DB 1; Length 111;  
Best Local Similarity 40.4%; Pred. No. 1.2e-13;  
Matches 38; Conservative 19; Mismatches 33; Indels 4; Gaps 2;

OY 10 CRPNATLAVEKGGPCVITVNTTICAGYCPMTRVQGVLPALPOV--VCHYRDVRFES 67  
DB 3 CELTININIEKRCISINITWNGCTYTRDYKQ--PAPRIKTKCTFKELVIET 60  
OY 68 IRLGCGRPNVSVYVAVALSCCALCRSTDC 101  
DB 61 VRVPGCAHSDSLYTPVALQCHGKCDSDTDC 94

RESULT 79  
US-08-086-915-11  
Sequence 11; Application US/08086915  
Patent No. 5441167  
GENERAL INFORMATION:  
APPLICANT: Petterson, Kim SI  
TITLE OF INVENTION: Variant Luteinizing Hormone Encoding DNA  
NUMBER OF SEQUENCES: 17  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Adduci, Matriani, Schaumburg & Schill  
STREET: 1140 Connecticut Avenue, N.W., Suite 250  
CITY: Washington  
STATE: D.C.  
COUNTRY: U.S.A.  
ZIP: 20036  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/086.915  
FILING DATE: 07-JUL-1993  
CLASSIFICATION: 536  
ATTORNEY/AGENT INFORMATION:  
NAME: Kubovcik, Ronald J.  
REGISTRATION NUMBER: 25,401  
REFERENCE/DOCKET NUMBER: 15873005  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-467-6300  
TELEFAX: 202-466-2006  
INFORMATION FOR SEQ ID NO: 11:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 46 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
HYDROPHILIC: NO  
ORIGINAL SOURCE:  
ORGANISM: Homo sapiens  
US-08-086-915-11

Query Match 26.6%; Score 207; DB 1; Length 46;  
Best Local Similarity 90.2%; Pred. No. 2.1e-13;  
Matches 37; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPM 42  
DB 6 SREPLRPMCHPINA1LAVEKGGPCVITVNTTICAGYCPM 46  
RESULT 81  
5177193-3  
Patent No. 5177193  
APPLICANT: BOWME, IRVING; MATZUK, MARTIN M.  
TITLE OF INVENTION: MODIFIED FORMS OF REPRODUCTIVE HORMONES  
NUMBER OF SEQUENCES: 20  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/532.254  
FILING DATE: 01-JUN-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 313,646  
FILING DATE: 21-FEB-1989  
SEQ ID NO: 3;  
LENGTH: 131  
5177193-3

Query Match 26.6%; Score 207; DB 1; Length 46;  
Best Local Similarity 90.2%; Pred. No. 2.1e-13;  
Matches 37; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPM 42  
DB 6 SREPLRPMCHPINA1LAVEKGGPCVITVNTTICAGYCPM 46  
RESULT 81  
5177193-3  
Patent No. 5177193  
APPLICANT: BOWME, IRVING; MATZUK, MARTIN M.  
TITLE OF INVENTION: MODIFIED FORMS OF REPRODUCTIVE HORMONES  
NUMBER OF SEQUENCES: 20  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/532.254  
FILING DATE: 01-JUN-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 313,646  
FILING DATE: 21-FEB-1989  
SEQ ID NO: 3;  
LENGTH: 131  
5177193-3

OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPM 42  
DB 6 SREPLRPMCHPINA1LAVEKGGPCVITVNTTICAGYCPM 46  
RESULT 80  
US-08-086-915-13  
Sequence 13; Application US/08086915  
Patent No. 5441167  
GENERAL INFORMATION:  
APPLICANT: Petterson, Kim SI  
TITLE OF INVENTION: Variant Luteinizing Hormone Encoding DNA  
NUMBER OF SEQUENCES: 17  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Adduci, Matriani, Schaumburg & Schill  
STREET: 1140 Connecticut Avenue, N.W., Suite 250  
CITY: Washington  
STATE: D.C.  
COUNTRY: U.S.A.  
ZIP: 20036  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/086.915  
FILING DATE: 07-JUL-1993  
CLASSIFICATION: 536  
ATTORNEY/AGENT INFORMATION:  
NAME: Kubovcik, Ronald J.  
REGISTRATION NUMBER: 25,401  
REFERENCE/DOCKET NUMBER: 15873005  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-467-6300  
TELEFAX: 202-466-2006  
INFORMATION FOR SEQ ID NO: 13:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 46 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
HYDROPHILIC: NO  
ORIGINAL SOURCE:  
ORGANISM: Homo sapiens  
US-08-086-915-13

Query Match 26.6%; Score 207; DB 1; Length 46;  
Best Local Similarity 90.2%; Pred. No. 2.1e-13;  
Matches 37; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPM 42  
DB 6 SREPLRPMCHPINA1LAVEKGGPCVITVNTTICAGYCPM 46  
RESULT 81  
5177193-3  
Patent No. 5177193  
APPLICANT: BOWME, IRVING; MATZUK, MARTIN M.  
TITLE OF INVENTION: MODIFIED FORMS OF REPRODUCTIVE HORMONES  
NUMBER OF SEQUENCES: 20  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/532.254  
FILING DATE: 01-JUN-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 313,646  
FILING DATE: 21-FEB-1989  
SEQ ID NO: 3;  
LENGTH: 131  
5177193-3

Query Match 26.6%; Score 207; DB 1; Length 46;  
Best Local Similarity 90.2%; Pred. No. 2.1e-13;  
Matches 37; Conservative 1; Mismatches 3; Indels 0; Gaps 0;

OY 2 SKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPM 42  
DB 6 SREPLRPMCHPINA1LAVEKGGPCVITVNTTICAGYCPM 46  
RESULT 81  
5177193-3  
Patent No. 5177193  
APPLICANT: BOWME, IRVING; MATZUK, MARTIN M.  
TITLE OF INVENTION: MODIFIED FORMS OF REPRODUCTIVE HORMONES  
NUMBER OF SEQUENCES: 20  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/532.254  
FILING DATE: 01-JUN-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 313,646  
FILING DATE: 21-FEB-1989  
SEQ ID NO: 3;  
LENGTH: 131  
5177193-3

```

Query Match          24.8%   Score 193; DB 6; Length 131;
Best Local Similarity 39.6%; Prod No. 1,5e-11;
Matches 38; Conservative      18; Mismatches 34; Indels      6; Gaps      4;

QY    10 CRPINATLAVKEGCPVCTVTNTT-CAGYCYETRTVLGVGLPALPOV--VCNRYDVRRE 66
DB     | :|:||||| :|||:||| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :|
QY    21 CEUTINITATEKEBCRFCLISNTCKZGYCYTRDLVYED--PAPKIOTKTTELKELVE 78
DB     | :|:||||| :|||:||| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :|
QY    67 SIRLPGRGVNVPSVAVALSCCALC-RRSTDDC 101
DB     |:|:|||| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :|
QY    79 TVAVPCGHAAUSLTHPVATOCRCOKDSSTDCC 114
DB     |:|:|||| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :|

RESULT 82
US-08-086-915-17
: Sequence 17, Application US/08086915
: Patent No. 544157
: GENERAL INFORMATION:
: APPLICANT: Pettersson, Kim SI
: ADDRESS: 1140 Connecticut Avenue, N.W., Suite 250
: NUMBER OF SEQUENCES: Variant Lutetizing Hormone Encoding DNA
: CORRESPONDENCE ADDRESS: /note- The apparatus at position
: ADDRESS: Adduci, Mastriani, Schaumburg & Schill
: STREET: 1140 Connecticut Avenue, N.W., Suite 250
: CITY: Washington
: STATE: D.C.
: COUNTRY: U.S.A.
: ZIP: 20036
: COMPUTER RESEARCH FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: PatentIn Release #1.0, Version #1.25
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/086,915
: FILING DATE: 07-JUL-1993
: CLASSIFICATION: 536
: ATTORNEY/SUBMITTER INFORMATION:
: NAME: SUBOCHIN, Ronald J
: REGISTRATION NUMBER: 25,401
: REFERENCE/DOCKET NUMBER: 15873005
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 202-467-6300
: TELEFAX: 202-466-2006
: INFORMATION FOR SEQ ID NO: 17:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 41 amino acids
: TOPOLOGICAL INFO:
: MOLECULE TYPE: protein
: HYPOTHETICAL: NO
: FEATURE:
: NAME/KEY: Modified-site
: LOCATION: 13
: OTHER INFORMATION: /note- The apparatus at position
: OTHER INFORMATION: 13 is linked to an oligosaccharide.*
US-08-086-915-17

Query Match          24.5%   Score 191; DB 1; Length 41;
Best Local Similarity 82.9%; Prod No. 6.2e-12;
Matches 34; Conservative      2; Mismatches 5; Indels      0; Gaps      0;

QY    2 SKEPRLPRCRPINATLAVEKGCPVCTVTTCACGTCPTM 42
DB     | :|:||||| :|||:||| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :|
QY    1 SRGPRLRCPINATLAVEKACPVIITFTSICACGTCPTM 41
DB     | :|:||||| :|||:||| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :| :|

RESULT 83
US-08-086-915-15
: Sequence 15, Application US/08086915
: Patent No. 544157
: GENERAL INFORMATION:
: APPLICANT: Pettersson, Kim SI
```

;; FILING DATE: 09-SEP-1996  
;; CLASSIFICATION: 514  
;; ATTORNEY/AGENT INFORMATION:  
;; NAME: Mistrock, S. Leslie  
;; REGISTRATION NUMBER: 18,872  
;; REFERENCE/DOCKET NUMBER: 8769-018  
;; TELECOMMUNICATION INFORMATION:  
;; TELEPHONE: (212) 790-9090  
;; TELEFAX: (212) 869-9741/8864  
;; TELEFAX: 66141 PENNIE  
;; INFORMATION FOR SEQ ID NO: 25:  
;; SEQUENCE CHARACTERISTICS:  
;; LENGTH: 37 amino acids  
;; TYPE: amino acid  
;; TOPOLOGY: linear  
;; MOLECULE TYPE: peptide  
US-08-709-925-25

Query Match 22.5%; Score 175; DB 2; Length 37;  
Best Local Similarity 100.0%; Pred. No. 1.9e-10;  
Matches 32; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 110 TCDDPRFQDSSSKAPPSLPSPRLPGPSDT 141  
Db 1 TCDDPRFQDSSSKAPPSLPSPRLPGPSDT 32

RESULT 85  
US-08-709-925-25

;; Sequence 25  
;; Patent No. 5997871

;; GENERAL INFORMATION:

;; APPLICANT: Gallo, Robert C.

;; APPLICANT: Bryant, Joseph

;; TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY

;; TITLE OF INVENTION: ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN

;; NUMBER OF SEQUENCES: 26

;; CORRESPONDENCE ADDRESS: 26

;; ADDRESSEE: Pennie & Edmonds LLP

;; STREET: 1155 Avenue of the Americas

;; CITY: New York

;; STATE: New York

;; COUNTRY: USA

;; ZIP: 10036-2711

;; COMPUTER READABLE FORM:

;; MEDIUM TYPE: Floppy disk

;; COMPUTER: IBM PC compatible

;; OPERATING SYSTEM: PC-DOS/MS-DOS

;; SOFTWARE: Patent In Release #1.0, Version #1.30

;; CURRENT APPLICATION NUMBER: US/08/709,925

;; APPLICATION NUMBER: US/08/709,925

;; FILING DATE: 09-SEP-1996

;; CLASSIFICATION: 512

;; ATTORNEY/AGENT INFORMATION:

;; NAME: Mistrock, S. Leslie

;; REGISTRATION NUMBER: 18,872

;; REFERENCE/DOCKET NUMBER: 8769-017

;; TELECOMMUNICATION INFORMATION:

;; TELEPHONE: (212) 790-9090

;; TELEFAX: (212) 869-9741/8864

;; TELEFAX: 66141 PENNIE

;; INFORMATION FOR SEQ ID NO: 25:

;; SEQUENCE CHARACTERISTICS:

;; LENGTH: 37 amino acids

;; TYPE: amino acid

;; TOPOLOGY: linear

;; MOLECULE TYPE: peptide

US-08-709-925-25

Query Match 22.5%; Score 175; DB 2; Length 37;  
Best Local Similarity 100.0%; Pred. No. 1.9e-10;  
Matches 32; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 110 TCDDPRFQDSSSKAPPSLPSPRLPGPSDT 141  
Db 1 TCDDPRFQDSSSKAPPSLPSPRLPGPSDT 32

RESULT 86  
US-08-709-948-25

;; Sequence 25

;; Patent No. 6318504

;; GENERAL INFORMATION:

;; APPLICANT: Gallo, Robert C.

;; APPLICANT: Bryant, Joseph

;; APPLICANT: Lunardi-Iskandar, Yanto

;; TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION

;; TITLE OF INVENTION: BY ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOT

;; NUMBER OF SEQUENCES: 26

;; CORRESPONDENCE ADDRESS: 26

;; ADDRESSEE: Pennie & Edmonds LLP

;; STREET: 1155 Avenue of the Americas

;; CITY: New York

;; STATE: New York

;; COUNTRY: USA

;; ZIP: 10036-2711

;; COMPUTER READABLE FORM:

;; MEDIUM TYPE: Floppy disk

;; COMPUTER: IBM PC compatible

;; OPERATING SYSTEM: PC-DOS/MS-DOS

;; SOFTWARE: Patent In Release #1.0, Version #1.30

;; CURRENT APPLICATION NUMBER: US/08/709,948

;; APPLICATION NUMBER: US/08/709,948

;; FILING DATE: 09-SEP-1996

;; CLASSIFICATION: 424

;; ATTORNEY/AGENT INFORMATION:

;; NAME: Mistrock, S. Leslie

;; REGISTRATION NUMBER: 18,872

;; REFERENCE/DOCKET NUMBER: 8769-016

;; TELECOMMUNICATION INFORMATION:

;; TELEPHONE: (212) 790-9090

;; TELEFAX: (212) 869-9741/8864

;; TELEFAX: 66141 PENNIE

;; INFORMATION FOR SEQ ID NO: 25:

;; SEQUENCE CHARACTERISTICS:

;; LENGTH: 37 amino acids

;; TYPE: amino acid

;; TOPOLOGY: linear

;; MOLECULE TYPE: peptide

US-08-709-948-25

Query Match 22.5%; Score 175; DB 4; Length 37;  
Best Local Similarity 100.0%; Pred. No. 1.9e-10;  
Matches 32; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 110 TCDDPRFQDSSSKAPPSLPSPRLPGPSDT 141  
Db 1 TCDDPRFQDSSSKAPPSLPSPRLPGPSDT 32

RESULT 87  
US-08-086-915-16

;; Sequence 16, Application US/08086915

;; Patent No. 544167

;; GENERAL INFORMATION:

;; APPLICANT: Scherson, Kim S.

;; TITLE OF INVENTION: Variant Luteinizing Hormone Encoding DNA

;; NUMBER OF SEQUENCES: 17

;; CORRESPONDENCE ADDRESS:

;; ADDRESSEE: Adduci, Mastriani, Schaumberg & Schill

;; STREET: 1140 Connecticut Avenue, N.W., Suite 250

;; CITY: Washington

;; STATE: D.C.

;; COUNTRY: U.S.A.

;; ZIP: 20036



[illegible]

```
; STATE: Illinois
; COUNTRY: USA
; ZIP: 60064-3500
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE EDITION DATA:
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: PCT/US94/02539
; FILING DATE:
; CLASSIFICATION:
; ATTORNEY/AGENT INFORMATION:
; NAME: Wong, Wean Khing
; REGISTRATION NUMBER: 33,561
; REFERENCE/DOCKET NUMBER: 5324.PC.01
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (708) 938-3317
; TELEFAX: (708) 938-4023
; TELEX:
; INFORMATION FOR SEQ ID NO: 29:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 39 amino acid residues
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: unknown
; MOLECULE TYPE: peptide
; ORIGINAL SOURCE:
; SOURCE ORGANISM:
; PCT-US94-02539-29

Query Match 19.9%; Score 155; DB 5; Length 39;
Best Local Similarity 100.0%; Pred. No. 1.6e-08;
Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 113 DPFQDSSSKAPPSLPSPSLRPGPSDT 141
Db 1 DPFQDSSSKAPPSLPSPSLRPGPSDT 29

RESULT 91
5451527-8
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.;BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 8:
; LENGTH: 39
5451527-8

Query Match 19.9%; Score 155; DB 6; Length 39;
Best Local Similarity 100.0%; Pred. No. 1.6e-08;
Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 113 DPFQDSSSKAPPSLPSPSLRPGPSDT 141
Db 1 DPFQDSSSKAPPSLPSPSLRPGPSDT 29

RESULT 92
5451527-12
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.;BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
```

```
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 12:
; LENGTH: 39
5451527-12

Query Match 19.9%; Score 155; DB 6; Length 39;
Best Local Similarity 100.0%; Pred. No. 1.6e-08;
Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 113 DPFQDSSSKAPPSLPSPSLRPGPSDT 141
Db 6 DPFQDSSSKAPPSLPSPSLRPGPSDT 34

RESULT 93
5451527-6
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.;BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 6:
; LENGTH: 36
5451527-6

Query Match 17.4%; Score 135.5; DB 6; Length 36;
Best Local Similarity 93.1%; Pred. No. 1.1e-06;
Matches 27; Conservative 0; Mismatches 1; Indels 1; Gaps 1;

QY 113 DPFQDSSSKAPPSLPSPSLRPGPSDT 141
Db 1 DPFQDSSSKAPPSLPSPSLRPGPSDT 28

RESULT 94
5451527-9
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.;BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 9:
; LENGTH: 41
5451527-9

Query Match 17.4%; Score 135.5; DB 6; Length 41;
Best Local Similarity 93.1%; Pred. No. 1.2e-06;
Matches 27; Conservative 0; Mismatches 1; Indels 1; Gaps 1;
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Qy 113 DPFQDSSSKAPPSPSLPGRPGPSOT 141
Db 1 DPFQD-SSSKAPPSLPSPSLPGRPPDT 28

RESULT 95
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.; BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIORITY APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO.10:
; LENGTH: 41
5451527-10

Query Match 17.4% Score 135.5; DB 6;
Best Local Similarity 93.1%; Pred. No. 1.2e-06;
Matches 27; Conservative 0; Mismatches 1;

Qy 113 DPFQDSSSKAPPSPSLPGRPGPSOT 141
Db 6 DPFQD-SSSKAPPSLPSPSLPGRPPDT 33

RESULT 96
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.; BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIORITY APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO.10:
; LENGTH: 41
5451527-11

Query Match 17.4% Score 135.5; DB 6;
Best Local Similarity 93.1%; Pred. No. 1.2e-06;
Matches 27; Conservative 0; Mismatches 1;

Qy 113 DPFQDSSSKAPPSPSLPGRPGPSOT 141
Db 1 DPFQD-SSSKAPPSLPSPSLPGRPPDT 28

RESULT 97
; Patent No. 5451527
; APPLICANT: SARIN, VIRENDER K.; BODNER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PURIFICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIORITY APPLICATION DATA:

```

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RESULT 100
US-08-485-692-13
: Sequence 13, Application US/08485692
: Patent No. 5759818
: GENERAL INFORMATION:
: APPLICANT: BOIME, IRVING
: TITLE OF INVENTION: MODIFIED PROTEIN AND PEPTIDE
: TITLE OF INVENTION: PHARMACEUTICALS
: NUMBER OF SEQUENCES: 23
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Ave. N.W.
: CITY: Washington, D.C.
: COUNTRY: USA
: ZIP: 20006-1812
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: Patentin Release #1.0, Version #1.25
: CURRENT APPLICATION INFORMATION:
: APPLICATION NUMBER: US/08/485,692
: FILING DATE:
: CLASSIFICATION: 435
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 08/049,869
: FILING DATE: 20-APR-1993
: ATTORNEY/AGENT INFORMATION:
: NAME: MURASHIGE, KATE H.
: REGISTRATION NUMBER: 29,959
: REFERENCE/DOCKET NUMBER: 29500-20030.21
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: (202) 887-1500
: TELEFAX: (202) 887-0763
: TELEX: 90-4030
: INFORMATION FOR SEQ ID NO: 13:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 28 amino acids
: TYPE: amino acid
: STRANDEDNESS: single
: TOPOLOGY: linear
US-08-485-692-13
Query Match 15.4%; Score 120; DB 1; Length 28;
Best Local Similarity 100.0%; Pred. No. 2.4e-05;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 119 SSSSKAPPPSLPSRLPGPSDT 141
Db 1 SSSSKAPPPSLPSRLPGPSDT 23
RESULT 101
US-08-419-519-13
: Sequence 13, Application US/08419519
: Patent No. 5792460
: GENERAL INFORMATION:
: APPLICANT: BOIME, IRVING
: TITLE OF INVENTION: MODIFIED PROTEIN AND PEPTIDE
: TITLE OF INVENTION: PHARMACEUTICALS
: NUMBER OF SEQUENCES: 23
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Ave. N.W.
: CITY: Washington, D.C.
: COUNTRY: USA
: ZIP: 20006-1812
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: Patentin Release #1.0, Version #1.25
: CURRENT APPLICATION DATA:
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APPLICATION NUMBER: US/08/419,519
FILING DATE:
CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/049,869
FILING DATE: 20-APR-1993
ATTORNEY/AGENT INFORMATION:
NAME: MURASHIGE, KATE H.
REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 29500-20030.21
TELECOMMUNICATION INFORMATION:
TELEPHONE: (202) 887-1500
TELEFAX: (202) 887-0763
TELEX: 90-4030
INFORMATION FOR SEQ ID NO: 13:
SEQUENCE CHARACTERISTICS:
LENGTH: 28 amino acids
TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
US-08-419-519-13
Query Match 15.4%; Score 120; DB 1; Length 28;
Best Local Similarity 100.0%; Pred. No. 2.4e-05;
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 119 SSSSKAPPPSLPSRLPGPSDT 141
Db 1 SSSSKAPPPSLPSRLPGPSDT 23
RESULT 102
US-08-918-288-1
: Sequence 1, Application US/08918288
: Patent No. 6238890
: GENERAL INFORMATION:
: APPLICANT: BOIME, IRVING
: TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE
: TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET
: NUMBER OF SEQUENCES: 93
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORRISON & FOERSTER
: STREET: 2000 Pennsylvania Avenue, NW, suite 5500
: CITY: Washington
: STATE: DC
: COUNTRY: USA
: ZIP: 20006-1888
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette
: COMPUTER: IBM Compatible
: OPERATING SYSTEM: DOS
: SOFTWARE: FASTSO for Windows Version 2.0
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/918,288
: FILING DATE:
: CLASSIFICATION:
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 09/282,357
: FILING DATE:
: APPLICATION NUMBER: 08/853,324
: FILING DATE: 09-MAY-1997
: APPLICATION NUMBER: 08/199,382
: FILING DATE: 18-SEP-1994
: ATTORNEY/AGENT INFORMATION:
: NAME: MURASHIGE, KATE H.
: REGISTRATION NUMBER: 29,959
: REFERENCE/DOCKET NUMBER: 29500-20050.25
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 202-887-1500
: TELEFAX: 202-887-0763
: TELEX:
: INFORMATION FOR SEQ ID NO: 1:
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SEQUENCE CHARACTERISTICS:  
LENGTH: 28 amino acids  
TYPE: amino acids  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-918-288-1

Query Match 15.4%; Score 120; DB 4; Length 28;  
Best Local Similarity 100.0%; Pred. No. 2.4e-05;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 119 SSSSKAPPSLPSPRLGPSDT 141  
|||||  
DB 1 SSSSKAPPSLPSPRLGPSDT 23

## RESULT 103

US-09-282-357-1  
Sequence 1, Application US/09282357  
Patent No. 6242580  
GENERAL INFORMATION:  
APPLICANT: BOIME, Irving  
TITLE OF INVENTION: SINGLE-CHAIN FORMS OF THE  
TITLE OF INVENTION: GLYCOPROTEIN HORMONE QUARTET  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Avenue, NW, suite 5500  
CITY: Washington  
STATE: DC  
COUNTRY: USA  
ZIP: 20006-1888  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: MS-DOS Windows Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/282.357  
FILING DATE:  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/918,288  
FILING DATE: 25 AUG-1997  
APPLICATION NUMBER: 08/853,524  
FILING DATE: 09-MAY-1997  
APPLICATION NUMBER: 08/199,382  
FILING DATE: 18-FEB-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: Murashige, Kate H.  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20050.25  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 202-887-1500  
TELEFAX: 202-887-0763  
TELEX:  
INFORMATION FOR SEQ ID NO: 1:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 28 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-09-282-357-1

Query Match 15.4%; Score 120; DB 4; Length 28;  
Best Local Similarity 100.0%; Pred. No. 2.4e-05;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 119 SSSSKAPPSLPSPRLGPSDT 141  
|||||  
DB 1 SSSSKAPPSLPSPRLGPSDT 23

## RESULT 104

US-09-604-871-3  
Sequence 3, Application US/09604871  
Patent No. 6340744  
GENERAL INFORMATION:  
APPLICANT: Burq, Josef  
APPLICANT: Hilger, Bernd  
TITLE OF INVENTION: ERYTHROPOIETIN CONJUGATES  
FILE REFERENCE: 1098 nonprovisional  
CURRENT APPLICATION NUMBER: US/09/604,871  
CURRENT FILING DATE: 2000-06-28  
PRIOR APPLICATION NUMBER: 60/151,454  
PRIOR FILING DATE: 1999-08-30  
PRIOR APPLICATION NUMBER: 60/147,452  
PRIOR FILING DATE: 1999-08-30  
PRIOR APPLICATION NUMBER: 60/142,243  
PRIOR FILING DATE: 1999-07-02  
NUMBER OF SEQ ID NOS: 3  
SOFTWARE: PatentIn Ver. 2.1  
SEQ ID NO 3  
LENGTH: 28  
TYPE: PRT  
ORGANISM: Homo sapiens  
US-09-604-871-3

Query Match 15.4%; Score 120; DB 4; Length 28;  
Best Local Similarity 100.0%; Pred. No. 2.4e-05;  
Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 119 SSSSKAPPSLPSPRLGPSDT 141  
|||||  
DB 1 SSSSKAPPSLPSPRLGPSDT 23

## RESULT 105

US-08-239-256-3  
Sequence 3, Application US/08239256  
Patent No. 5585345  
GENERAL INFORMATION:  
APPLICANT: BOIME, IRVING  
APPLICANT: MATZUK, MARTIN M.  
APPLICANT: KEENE, JEFFREY L.  
TITLE OF INVENTION: CTP EXTENDED FORM OF LH  
NUMBER OF SEQUENCES: 24  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Ave. N.W.  
CITY: Washington, D.C.  
COUNTRY: USA  
ZIP: 20006-1812  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/239,256  
FILING DATE: 06-MAY-1994  
FILING DATE: 06-MAY-1994  
FILING DATE: 06-MAY-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: MURASHIGE, KATE H.  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20030.12  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (202) 887-1500  
TELEFAX: (202) 887-0763  
TELEX: 90-4030  
INFORMATION FOR SEQ ID NO: 3:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 75 amino acids  
TYPE: amino acid

```
;
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-239-256-3

Query Match 15.1%; Score 117; DB 1; Length 75;
Best Local Similarity 34.0%; Pred. No. 0.00014;
Matches 18; Conservative 14; Mismatches 19; Indels 2; Gaps 1;

OY 51 PALPOV--VCNRYDVFRESIRLPCGPGVNVVYVALSCCALCRSTTDC 101
|||::|:::|:::|:::|:::|:::|:::|:::|:::|:::|:::|:::|:::|
DB 7 PARPKTKTCTFKELVETVRVPGCAHHAUSLYTPVATQCHGCKGKDSSTDC 59

RESULT 106
5177193-5
; Patent No. 5177193
; APPLICANT: BOYME, IRVING; MATZUK, MARTIN M.
; TITLE OF INVENTION: MODIFIED FORMS OF REPRODUCTIVE HORMONES
; NUMBER OF SEQUENCES: 26
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/532,254
; FILING DATE: 01-JUN-1990
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 313,646
; FILING DATE: 21-FEB-1989
; SEQ ID NO: 5
; LENGTH: 76
5177193-5

Query Match 15.1%; Score 117; DB 6; Length 76;
Best Local Similarity 34.0%; Pred. No. 0.00014;
Matches 18; Conservative 14; Mismatches 19; Indels 2; Gaps 1;

OY 51 PALPOV--VCNRYDVFRESIRLPCGPGVNVVYVALSCCALCRSTTDC 101
|||::|:::|:::|:::|:::|:::|:::|:::|:::|:::|:::|:::|
DB 7 PARPKTKTCTFKELVETVRVPGCAHHAUSLYTPVATQCHGCKGKDSSTDC 59

RESULT 107
US-08-239-256-2
; Sequence 2, Application US/08239256
; Patent No. 5585345
; GENERAL INFORMATION:
; APPLICANT: BOYME, IRVING
; APPLICANT: MATZUK, MARTIN M.
; APPLICANT: KEENE, JEFFREY L.
; TITLE OF INVENTION: CTP EXTENDED FORM OF LH
; NUMBER OF SEQUENCES: 24
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MARRISON & FOERSTER
; STREET: 2000 Pennsylvania Ave. N.W.
; CITY: Washington, D.C.
; COUNTRY: USA
; ZIP: 20006-1812
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/239,256
; FILING DATE: 06-MAY-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 313,646
; FILING DATE: 21-FEB-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: MURASHIGE, KATE H.
; REGISTRATION NUMBER: 29,959
; REFERENCE/DOCKET NUMBER: 29500-20030.12
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (202) 887-1500
; TELEFAX: (202) 887-0763
; TELEX: 90-4030
; INFORMATION FOR SEQ ID NO: 2:
; SEQUENCE CHARACTERISTICS:
;
; LENGTH: 53 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-239-256-2

Query Match 14.3%; Score 110; DB 1; Length 53;
Best Local Similarity 59.4%; Pred. No. 0.00045;
Matches 19; Conservative 4; Mismatches 9; Indels 0; Gaps 0;

OY 10 CRPINATLAVEKBCPCVITVNTTCAGTCPT 41
| | | | | | | | | | | | | | | | | | |
DB 21 CELTNITIAIEKEKRCFCISINTTWCAGTCYT 52

RESULT 108
US-09-305-639-2
; Sequence 2, Application US/09305639
; Patent No. 6200778
; GENERAL INFORMATION:
; APPLICANT: Treco, Douglas A.
; APPLICANT: Heartlein, Michael W.
; APPLICANT: Selden, Richard F.
; TITLE OF INVENTION: GENOMIC SEQUENCES FOR PROTEIN PRODUCTION AND DELIVERY
; FILE REFERENCE: 07236/015001US/09/305,639
; CURRENT APPLICATION NUMBER: US/09/305,639
; FILING DATE: 1998-05-07
; EARLIER APPLICATION NUMBER: 60/084,663
; EARLIER FILING DATE: 1998-05-07
; NUMBER OF SEQ ID NOS: 7
; SOFTWARE: FastSeq for Windows Version 3.0
; SEQ ID NO 2
; TYPE: PRT
; LENGTH: 53
; ORGANISM: Homo sapiens
; US-09-305-639-2

Query Match 14.3%; Score 110; DB 4; Length 53;
Best Local Similarity 59.4%; Pred. No. 0.00045;
Matches 19; Conservative 4; Mismatches 9; Indels 0; Gaps 0;

OY 10 CRPINATLAVEKBCPCVITVNTTCAGTCPT 41
| | | | | | | | | | | | | | | | | | |
DB 21 CELTNITIAIEKEKRCFCISINTTWCAGTCYT 52

RESULT 109
5451527-3
; Patent No. 5451527
; APPLICANT: SHRIM, VIRENDER K.; BOONER, JOHN B.
; TITLE OF INVENTION: HCG PEPTIDES FOR USE IN ANTIBODY
; PUBLICATION PROCEDURES
; NUMBER OF SEQUENCES: 14
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/07/647,893
; FILING DATE: 30-JAN-1991
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 375,731
; FILING DATE: 10-JUL-1989
; APPLICATION NUMBER: 221,687
; FILING DATE: 20-JUL-1988
; SEQ ID NO: 3
; LENGTH: 23
5451527-3

Query Match 12.7%; Score 99; DB 6; Length 23;
Best Local Similarity 100.0%; Pred. No. 0.002;
Matches 18; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 124 APPPSLPSPRLPGPSDT 141
|||||
DB 1 APPPSLPSPRLPGPSDT 18
```

```

RESULT 110
US-08-036-555B-20
; Sequence 20, Application US/08036555B
; Patent No. 5606032
; GENERAL INFORMATION:
; APPLICANT: Goodearl, Andrew; Stroobant, Paul;
; APPLICANT: Minghetti, Luisa; Waterfield, Michael; Marchionni, Mark;
; APPLICANT: Chen, Maio Su; Hiles, Ian
; TITLE OF INVENTION: Glial Mitogenic Factors, Their
; PREPARATION AND USE
; NUMBER OF SEQUENCES: 184
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Felfe & Lynch
; STREET: 805 Third Avenue
; CITY: New York City
; STATE: New York
; COUNTRY: USA
; ZIP: 10022
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage
; COMPUTER: IBM
; OPERATING SYSTEM: PC-DOS
; SOFTWARE: Wordperfect
; CURRENT APPLICATION DATA:
; FILING DATE: 24-MAR-1993
; APPLICATION NUMBER: US/08/036,555B
; CLASSIFICATION: 435
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/965,173
; FILING DATE: 23-OCT-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/940,389
; FILING DATE: 03-SEP-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/907,138
; FILING DATE: 30-JUN-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/863,703
; FILING DATE: 03-APRIL-1991
; APPLICATION NUMBER: U.K. 91 07566.3
; ATTORNEY/AGENT INFORMATION:
; NAME: Tsai, Christine H.
; REGISTRATION NUMBER: 34,266
; REFERENCE/DOCKET NUMBER: LUD 5250.4
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 838-3884
; TELEFAX: (212) 838-3884
; INFORMATION FOR SEQ ID NO: 20:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 26
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
US-08-036-555B-20

```

```

Query Match 11.7%; Score 91; DB 1; Length 26;
Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCGPGRVNPVSYAVAL 87
Db 1 ELSFASVRLPGCGPGRVNPVSYAVAL 26

RESULT 111
US-08-469-569-20
; Sequence 20, Application US/08469569
; Patent No. 5606032
; GENERAL INFORMATION:
; APPLICANT: Goodearl, Andrew; Stroobant, Paul;
; APPLICANT: Minghetti, Luisa; Waterfield, Michael; Marchionni, Mark;
; APPLICANT: Chen, Maio Su; Hiles, Ian
; TITLE OF INVENTION: Glial Mitogenic Factors, Their
; PREPARATION AND USE
; NUMBER OF SEQUENCES: 184

```

```

; APPLICANT: Minghetti, Luisa; Waterfield, Michael; Marchionni, Mark;
; APPLICANT: Chen, Maio Su; Hiles, Ian
; TITLE OF INVENTION: Glial Mitogenic Factors, Their
; PREPARATION AND USE
; NUMBER OF SEQUENCES: 184
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Felfe & Lynch
; STREET: 805 Third Avenue
; CITY: New York City
; STATE: New York
; COUNTRY: USA
; ZIP: 10022
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage
; COMPUTER: IBM
; OPERATING SYSTEM: PC-DOS
; SOFTWARE: Wordperfect
; CURRENT APPLICATION DATA:
; FILING DATE: 24-MAR-1993
; APPLICATION NUMBER: US/08/469,569
; CLASSIFICATION: 530
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/036,555
; FILING DATE: 24-MAR-1993
; APPLICATION NUMBER: 07/965,173
; FILING DATE: 23-OCT-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/940,389
; FILING DATE: 03-SEP-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/907,138
; FILING DATE: 30-JUN-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 07/863,703
; FILING DATE: 03-APRIL-1992
; APPLICATION NUMBER: U.K. 91 07566.3
; ATTORNEY/AGENT INFORMATION:
; NAME: Tsai, Christine H.
; REGISTRATION NUMBER: 34,266
; REFERENCE/DOCKET NUMBER: LUD 5250.4
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 838-3884
; TELEFAX: (212) 838-3884
; INFORMATION FOR SEQ ID NO: 20:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 26
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
US-08-469-569-20

```

```

Query Match 11.7%; Score 91; DB 1; Length 26;
Best Local Similarity 61.5%; Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCGPGRVNPVSYAVAL 87
Db 1 ELSFASVRLPGCGPGRVNPVSYAVAL 26

RESULT 112
US-08-249-322A-20
; Sequence 20, Application US/08249322A
; Patent No. 5716930
; GENERAL INFORMATION:
; APPLICANT: Goodearl, Andrew; Stroobant, Paul;
; APPLICANT: Minghetti, Luisa; Waterfield, Michael; Marchionni, Mark;
; APPLICANT: Chen, Maio Su; Hiles, Ian
; TITLE OF INVENTION: Glial Mitogenic Factors, Their
; PREPARATION AND USE
; NUMBER OF SEQUENCES: 184

```

? CORRESPONDENCE ADDRESS:  
 ? ADDRESSEE: Felfe & Lynch  
 ? STREET: 805 Third Avenue  
 ? CITY: New York City  
 ? STATE: New York  
 ? COUNTRY: USA  
 ? ZIP: 10022  
 ?  
 ? COMPUTER READABLE FORM:  
 ? MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage  
 ? COMPUTER: IBM  
 ? OPERATING SYSTEM: PC-DOS  
 ? SOFTWARE: Wordperfect  
 ? CURRENT APPLICATION DATA:  
 ? APPLICATION NUMBER: US/08/249,322A  
 ? FILING DATE: 26-MAY-1994  
 ? CLASSIFICATION: 435  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 08/036,555  
 ? FILING DATE: 24-MAR-1993  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 07/965,173  
 ? FILING DATE: 23-OCT-1992  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 07/940,389  
 ? FILING DATE: 03-SEP-1992  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 07/907,138  
 ? FILING DATE: 10-JUN-1992  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 07/863,703  
 ? FILING DATE: 03-APRIL-1992  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: U.K. 91 07566.3  
 ? FILING DATE: 10-APRIL-1991  
 ? ATTORNEY/AGENT INFORMATION:  
 ? NAME: Tsai, Christine H.  
 ? REGISTRATION NUMBER: 34,266  
 ? REFERENCE/DOCKET NUMBER: LUD 250.4  
 ? TELEPHONE: (212) 688-9200  
 ? TELEFAX: (212) 838-3884  
 ? INFORMATION FOR SEQ ID NO: 20:  
 ? SEQUENCE CHARACTERISTICS:  
 ? LENGTH: 26  
 ? TYPE: amino acid  
 ? STRANDEDNESS:  
 ? TOPOLOGY: linear  
 ?  
 ? US-08-249-322A-20

Query Match 11.74; Score 91; DB 1; Length 26;  
 Best Local Similarity 61.54; Pred No. 0.013;  
 Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCPGVNPNVSYVAL 87  
 DB 1 ELSFASVRLPGCPGVNPNVSYVAL 26

RESULT 113  
 US-08-469-526A-20  
 ? Sequence 20, Application US/08469526A  
 ? Patent No. 5792849  
 ? GENERAL INFORMATION:  
 ? APPLICANT: Goodearl, Andrew  
 ? APPLICANT: Stroobant, Paul  
 ? APPLICANT: Minghetti, Luisa  
 ? APPLICANT: Waterfield, Michael  
 ? APPLICANT: Marchionni, Mark  
 ? APPLICANT: Chen, Malo Su  
 ? APPLICANT: Hiles, Ian  
 ? TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR  
 ? PREPARATION AND USE  
 ? NUMBER OF SEQUENCES: 187

? CORRESPONDENCE ADDRESS:  
 ? ADDRESSEE: Clark & Elbing LLP  
 ? STREET: 176 Federal Street  
 ? CITY: Boston  
 ? STATE: MA  
 ? COUNTRY: USA  
 ? ZIP: 02110  
 ?  
 ? COMPUTER READABLE FORM:  
 ? MEDIUM TYPE: Diskette  
 ? COMPUTER: IBM Compatible  
 ? OPERATING SYSTEM: DOS  
 ? SOFTWARE: FastSeq for Windows Version 2.0  
 ? CURRENT APPLICATION DATA:  
 ? APPLICATION NUMBER: US/08/469,526A  
 ? FILING DATE: 06 June 1995  
 ? CLASSIFICATION: 435  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 08/036,555  
 ? FILING DATE: 24-MAR-1993  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 07/965,173  
 ? FILING DATE: 23-OCT-1992  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 07/940,389  
 ? FILING DATE: 03-SEP-1992  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 07/907,138  
 ? FILING DATE: 03-JUN-1992  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: 07/863,703  
 ? FILING DATE: 03-APRIL-1992  
 ? PRIOR APPLICATION DATA:  
 ? APPLICATION NUMBER: U.K. 91 07566.3  
 ? FILING DATE: 10-APR-1991  
 ? ATTORNEY/AGENT INFORMATION:  
 ? NAME: Bleker-Brady, Kristina  
 ? REGISTRATION NUMBER: 39,109  
 ? REFERENCE/DOCKET NUMBER: 04585/00200A  
 ? TELECOMMUNICATION INFORMATION:  
 ? TELEPHONE: 617-428-0200  
 ? TELEFAX: 617-428-7045  
 ? INFORMATION FOR SEQ ID NO: 20:  
 ? SEQUENCE CHARACTERISTICS:  
 ? LENGTH: 26  
 ? TYPE: amino acid  
 ? STRANDEDNESS: single  
 ? TOPOLOGY: linear  
 ?  
 ? US-08-469-526A-20

Query Match 11.74; Score 91; DB 1; Length 26;  
 Best Local Similarity 61.54; Pred No. 0.013;  
 Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCPGVNPNVSYVAL 87  
 DB 1 ELSFASVRLPGCPGVNPNVSYVAL 26

RESULT 114  
 US-08-734-591A-20  
 ? Sequence 20, Application US/08734591A  
 ? Patent No. 5854220  
 ? GENERAL INFORMATION:  
 ? APPLICANT: Goodearl, Andrew  
 ? APPLICANT: Stroobant, Paul  
 ? APPLICANT: Minghetti, Luisa  
 ? APPLICANT: Waterfield, Michael  
 ? APPLICANT: Hiles, Ian  
 ? APPLICANT: Marchionni, Mark  
 ? APPLICANT: Chen, Mario  
 ? TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR  
 ? PREPARATION AND USE  
 ? NUMBER OF SEQUENCES: 187  
 ? CORRESPONDENCE ADDRESS:  
 ? ADDRESSEE: Clark & Elbing LLP  
 ? STREET: 176 Federal Street  
 ? CITY: Boston  
 ? STATE: Massachusetts



```

? COUNTRY: U.S.A.
? ZIP: 02110
? COMPUTER READABLE FORM:
? MEDIUM TYPE: 3 1/2" Diskette, 1.44 MB
? OPERATING SYSTEM: IBM Compatible Pentium
? SOFTWARE: WordPerfect (Version 7.0)
? CURRENT APPLICATION DATA:
? APPLICATION NUMBER: US/08/734,591A
? FILING DATE: 22-OCT-1996
? CLASSIFICATION: 536
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 08/470,335
? FILING DATE: 06-JUN-1995
? PROTOCLATION NUMBER: 08/036,555
? FILING DATE: 03-MAR-1993
? APPLICATION NUMBER: 07/965,173
? FILING DATE: 23-OCT-1992
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 07/940,389
? FILING DATE: 03-SEP-1992
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 07/907,138
? FILING DATE: 30-JUN-1992
? APPLICATION NUMBER: 07/853,703
? FILING DATE: 03-APR-1992
? APPLICATION DATA:
? APPLICATION NUMBER: UK 91 07566.3
? FILING DATE: 10-APR-1991
? ATTORNEY/AGENT INFORMATION:
? NAME: Bieker-Brady, Kristina
? REFERENCE/DOCKET NUMBER: 04585/00200P
? TELECOMMUNICATION INFORMATION:
? TELEPHONE: (617) 428-0200
? TELEFAX: (617) 428-7045
? TELEX:
? INFORMATION FOR SEQ ID NO: 20:
? SEQUENCE CHARACTERISTICS:
? LENGTH: 26
? TYPE: amino acid
? STRANDEDNESS:
? TOPOLOGY: linear
? US-08-734-591A-20

Query Match 11.7% Score 91; DB 2; Length 26;
Best Local Similarity 61.5%; Pred No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCGVNPVSYAVAL 87
DB 1 ELSFASVRLPGCGVNPVSYAVAL 26

RESULT 115
US-08-469-660-20
Sequence 20 Application US/08469660
Patent No. 5875971
GENERAL INFORMATION:
APPLICANT: Gwynne, David I.; Marchionni, Mark;
APPLICANT: McBurney, Robert N.
TITLE OF INVENTION: INHIBITORS OF CELL PROLIFERATION,
TITLE OF INVENTION: THEIR PREPARATION AND USE
NUMBER OF SEQUENCES: 184
CORRESPONDENCE ADDRESS:
ADDRESSEE: Fish & Richardson
STREET: 225 Franklin Street
CITY: Boston, Massachusetts
STATE: Massachusetts
ZIP: 0211-2804

```

```

? COMPUTER READABLE FORM:
? MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage
? COMPUTER: IBM
? OPERATING SYSTEM: PC-DOS
? SOFTWARE: WordPerfect
? CURRENT APPLICATION DATA:
? APPLICATION NUMBER: US/08/469,660
? FILING DATE:
? CLASSIFICATION: 435
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 08/011,396
? FILING DATE: 29-JAN-1993
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 07/984,085
? FILING DATE: 01-DEC-1992
? APPLICATION NUMBER: 07/951,747
? FILING DATE: 25-SEP-1992
? PRIOR APPLICATION DATA:
? APPLICATION NUMBER: 07/927,337
? FILING DATE: 10-AUG-1992
? ATTORNEY/AGENT INFORMATION:
? NAME: Clark, Paul T.
? REGISTRATION NUMBER: 30,162
? REFERENCE/DOCKET NUMBER: 04585/017004
? TELECOMMUNICATION INFORMATION:
? TELEPHONE: (617) 542-5070
? TELEFAX: 200154
? INFORMATION FOR SEQ ID NO: 20:
? SEQUENCE CHARACTERISTICS:
? LENGTH: 26
? TYPE: amino acid
? STRANDEDNESS:
? TOPOLOGY: linear
? US-08-469-660-20

Query Match 11.7% Score 91; DB 2; Length 26;
Best Local Similarity 61.5%; Pred No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRFESIRLPGCGVNPVSYAVAL 87
DB 1 ELSFASVRLPGCGVNPVSYAVAL 26

RESULT 116
US-08-470-335-20
Sequence 20 Application US/08470335F
Patent No. 6147190
GENERAL INFORMATION:
APPLICANT: GOODEARL, ANDREW
APPLICANT: STROOBANT, PAUL
APPLICANT: MINGHETTI, LUISA
APPLICANT: WATERFIELD, MICHAEL
APPLICANT: MARCHIONNI, MARK
APPLICANT: CHEN, MARIO S.
APPLICANT: HILES, IAN
TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR
TITLE OF INVENTION: PREPARATION AND USE
NUMBER OF SEQUENCES: 148
CURRENT APPLICATION NUMBER: US/08/470,335F
EARLIER FILING DATE: 1995-06-06
EARLIER FILING DATE: 1993-03-24
NUMBER OF SEQ ID NOS: 252
SOFTWARE: FastSeq for Windows Version 4.0
SEQ ID NO 20
LENGTH: 26
TYPE: PRT
ORGANISM: Bos taurus
US-08-470-335-20
Query Match 11.7% Score 91; DB 4; Length 26;

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Best Local Similarity 61.5%; Pred. No. 0.013;  
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

OY 62 DVRFESIRLPGCGPVGVWVSVFVAL 87  
DB 1 ELSFASVRLPGCGPVGVWVSVFVAL 26

RESULT 117

US-08-735-021-20  
; Sequence 20, Application US/08735021B  
; Patent No. 6194377  
; GENERAL INFORMATION:  
; APPLICANT: GOODEARL, ANDREW  
; APPLICANT: STROOBANT, PAUL  
; APPLICANT: MINGHETTI, LUISA  
; APPLICANT: WATERFIELD, MICHAEL  
; APPLICANT: MARCHIONNI, MARK  
; APPLICANT: CHEN, MARIO S.  
; TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR  
; FILE OF INVENTION: PREPARATION AND USE  
; CURRENT APPLICATION NUMBER: US/08/735,021B  
; CURRENT FILING DATE: 1996-10-22  
; EARLIER APPLICATION NUMBER: 08/472,065  
; EARLIER FILING DATE: 1993-03-24  
; EARLIER APPLICATION NUMBER: 08/036,555  
; EARLIER FILING DATE: 1993-03-24  
; EARLIER APPLICATION NUMBER: 07/965,173  
; EARLIER FILING DATE: 1992-10-23  
; EARLIER APPLICATION NUMBER: 07/940,389  
; EARLIER FILING DATE: 1992-09-03  
; EARLIER APPLICATION NUMBER: 07/907,138  
; EARLIER FILING DATE: 1992-06-30  
; EARLIER APPLICATION NUMBER: 07/863,703  
; EARLIER FILING DATE: 1992-04-03  
; NUMBER OF SEQUENCES: 187  
; SOFTWARE: FASTSEQ for Windows Version 3.0  
; SEQ ID NO 20  
; LENGTH: 26  
; TYPE: PRT  
; ORGANISM: Bos taurus  
US-08-735-021-20

Query Match 11.7%; Score 91; DB 4; Length 26;  
Best Local Similarity 61.5%; Pred. No. 0.013;  
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

OY 62 DVRFESIRLPGCGPVGVWVSVFVAL 87  
DB 1 ELSFASVRLPGCGPVGVWVSVFVAL 26

RESULT 118

US-08-734-664A-20  
; Sequence 20, Application US/08734664A  
; Patent No. 6204241  
; GENERAL INFORMATION:  
; APPLICANT: GOODEARL, ANDREW  
; APPLICANT: STROOBANT, PAUL  
; APPLICANT: MINGHETTI, LUISA  
; APPLICANT: WATERFIELD, MICHAEL  
; APPLICANT: MARCHIONNI, MARK  
; APPLICANT: CHEN, MARIO  
; APPLICANT: HILES, IAN  
; TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR  
; FILE OF INVENTION: PREPARATION AND USE  
; NUMBER OF SEQUENCES: 187  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Clark & Elbing LLP  
; STREET: 176 Federal Street  
; CITY: Boston

STATE: Massachusetts  
COUNTRY: U.S.A.  
ZIP: 02110  
COMPUTER READABLE FORM:  
MEDIUM TYPE: 3.5" Diskette, 1.44 MB  
COMPUTER: IBM Compatible Pentium  
OPERATING SYSTEM: Windows95  
SOFTWARE: FASTSEQ Version 2.0  
CURRENT APPLICATION NUMBER: US/08/734,664A  
APPLICATION NUMBER: US/08/734,664A  
FILING DATE: 22-OCT-1996  
CLASSIFICATION: 536  
PRIOR APPLICATION DATA:  
PRIOR APPLICATION NUMBER: 08/249,322  
FILING DATE: 26-MAY-1994  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 08/036,555  
FILING DATE: 24-MAR-1993  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 07/965,173  
FILING DATE: 23-OCT-1992  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 07/940,389  
FILING DATE: 03-SEP-1992  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 07/907,138  
FILING DATE: 30-JUN-1992  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: 07/863,703  
FILING DATE: 03-APR-1992  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: UK 91 07566.3  
FILING DATE: 10-APR-1991  
ATTORNEY/AGENT INFORMATION:  
NAME: Bleker-Brady, Kristina  
REGISTRATION NUMBER: 39,109  
REFERENCE/DOCKET NUMBER: 04585/00200J  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (617) 428-7400  
TELEFAX: (617) 428-7045  
TELEX:  
INFORMATION FOR SEQ ID NO: 20:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 26  
TYPE: amino acid  
STRANDEDNESS:  
TOPOLOGY: linear  
US-08-734-664A-20

Query Match 11.7%; Score 91; DB 4; Length 26;  
Best Local Similarity 61.5%; Pred. No. 0.013;  
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

OY 62 DVRFESIRLPGCGPVGVWVSVFVAL 87  
DB 1 ELSFASVRLPGCGPVGVWVSVFVAL 26

RESULT 119

US-08-470-339-20  
; Sequence 20, Application US/08470339C  
; Patent No. 622286  
; GENERAL INFORMATION:  
; APPLICANT: GOODEARL, ANDREW  
; APPLICANT: STROOBANT, PAUL  
; APPLICANT: MINGHETTI, LUISA  
; APPLICANT: WATERFIELD, MICHAEL  
; APPLICANT: MARCHIONNI, MARK  
; APPLICANT: CHEN, MARIO S.  
; APPLICANT: HILES, IAN  
; TITLE OF INVENTION: GLIAL MITOGENIC FACTORS, THEIR  
; FILE OF INVENTION: PREPARATION AND USE  
; FILE REFERENCE: 04585/002008

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: CURRENT APPLICATION NUMBER: US/08/470.339C
: EARLIER FILING DATE: 1995-06-06
: EARLIER APPLICATION NUMBER: 08/036,555
: EARLIER FILING DATE: 1993-03-24
: EARLIER FILING DATE: 1993-09-03
: EARLIER FILING DATE: 1993-09-03
: EARLIER FILING DATE: 1992-06-30
: EARLIER FILING DATE: 1992-06-30
: EARLIER FILING DATE: 1992-04-03
: EARLIER FILING DATE: 1992-04-03
: EARLIER FILING DATE: 1999-04-10
: NUMBER OF SEQ ID NOS: 226
: SOFTWARE: FASTSEQ for Windows Version 4.0
: SEQ ID NO: 20
: LENGTH: 26
: TYPE: PRT
: ORGANISM: Bos taurus
: US-08-470-339-20

Query Match      11.7%  Score 91; DB 4; Length 26;
Best Local Similarity 61.5%  Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY  62 DVRFESIRLPGCPGVNPNVSYAVAL 87
DB   1 ELFSASVRLPGCPGVNPNVSYAVAL 26

RESULT 120
PCT-US94-05083C-20
: Sequence 20, Application PC/TUS9405083C
: GENERAL INFORMATION:
: APPLICANT: Robert Sklar, Mark Marchionni,
: APPLICANT: David I. Gwynne
: TITLE OF INVENTION: METHODS FOR ALTERING
: TITLE OF INVENTION: MUSCLE CONDITION
: NUMBER OF SEQUENCES: 165
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: Fish & Richardson
: STREET: 225 Franklin Street
: CITY: Boston
: STATE: Massachusetts
: ZIP: 02110-2804
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette, 5.25 inch, 360
: MEDIUM TYPE: kb storage
: COMPUTER: IBM
: OPERATING SYSTEM: PC-DOS
: SOFTWARE: Wordperfect
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: PCT/US94/05083C
: FILING DATE: 06-MAY-94
: CLASSIFICATION:
: PRIOR APPLICATION DATA:
: PRIOR APPLICATION NUMBER: 08/209,204
: FILING DATE: 08-MAR-94
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 08/059,022
: FILING DATE: 06-MAY-93
: NAME, CLERK, INFORMATION:
: REGISTRATION NUMBER: 30,162
: REFERENCE/DOCKET NUMBER: 04585/028MO1
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: (617) 542-5070
: TELEFAX: (617) 542-8906
: TELEX: 200154
: INFORMATION FOR SEQ ID NO: 20:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 26
: TYPE: amino acid
: STRANDEDNESS:

```

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: TOPOLOGY: linear
: PCT-US94-05083C-20

Query Match      11.7%  Score 91; DB 5; Length 26;
Best Local Similarity 61.5%  Pred. No. 0.013;
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY  62 DVRFESIRLPGCPGVNPNVSYAVAL 87
DB   1 ELFSASVRLPGCPGVNPNVSYAVAL 26

RESULT 121
PCT-US95-06846A-20
: Sequence 20, Application PC/TUS9506846A
: GENERAL INFORMATION:
: APPLICANT: Goshall, Andrew David; Stroobant, Paul;
: APPLICANT: Mignottelli, Luisa; Waterfield, Michael; Marchionni, Mark;
: APPLICANT: Chen, Mao Su; Hiles, Ian
: TITLE OF INVENTION: Glial Mitogenic Factors, Their
: TITLE OF INVENTION: Preparation and Use
: NUMBER OF SEQUENCES: 178
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: Felfe & Lynch
: STREET: 805 Third Avenue
: CITY: New York City
: STATE: New York
: COUNTRY: USA
: ZIP: 10022
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Diskette, 5.25 inch, 360 kb storage
: COMPUTER: IBM
: OPERATING SYSTEM: PC-DOS
: SOFTWARE: Wordperfect
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: PCT/US95/06846A
: FILING DATE: 25-MAY-1995
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 08/249,322
: FILING DATE: 26-MAY-1994
: CLASSIFICATION:
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 08/036,555
: FILING DATE: 24-MAR-1993
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 07/965,173
: FILING DATE: 23-OCT-1992
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 07/940,389
: FILING DATE: 05-SEP-1992
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 07/907,138
: FILING DATE: 30-JUN-1992
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: 07/863,703
: FILING DATE: 03-APRIL-1992
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: U.K. 91 07566.3
: FILING DATE: 10-APRIL-1991
: ATTORNEY/AGENT INFORMATION:
: NAME, CLERK, INFORMATION:
: REGISTRATION NUMBER: 30,946
: REFERENCE/DOCKET NUMBER: 04585/028MO1
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: (212) 688-9200
: TELEFAX: (212) 838-3884
: INFORMATION FOR SEQ ID NO: 20:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 26
: TYPE: amino acid
: STRANDEDNESS:
: TOPOLOGY: linear
: PCT-US95-06846A-20

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Query Match 11.7% Score 91; DB 5; Length 26;  
Best Local Similarity 61.5%; Pred. No. 0.013;  
Matches 16; Conservative 6; Mismatches 4; Indels 0; Gaps 0;

QY 62 DVRESIRLPCPGVNVVSYVAL 87  
DB 1 ELSPASVRLPCPGVNVVSYVAL 26

## RESULT 122

US-09-146-283-4

; Sequence 4, Application US/09146283

; Patent No. 5976546

; GENERAL INFORMATION:

; APPLICANT: Laus, Reiner

; APPLICANT: Ruegg, Curtis L.

; TITLE OF INVENTION: Immunostimulatory Compositions

; NUMBER OF SEQUENCES: 10

; CORRESPONDENCE ADDRESS:

; ADDRESSEE: Dehlinger &amp; Associates

; STREET: 350 Cambridge Ave. Suite 250

; CITY: Palo Alto

; STATE: CA

; COUNTRY: USA

; ZIP: 94306

; COMPUTER READABLE FORM:

; MEDIUM TYPE: Floppy disk

; COMPUTER: IBM PC compatible

; OPERATING SYSTEM: PC-DOS/MS-DOS

; SOFTWARE: Patent In Release #1.0, Version #1.25

; CURRENT APPLICATION DATA:

; APPLICATION NUMBER: US/09/146,283

; FILING DATE: 03-SEPT-1998

; CLASSIFICATION: 536

; ATTORNEY/AGENT INFORMATION:

; NAME: Judge, Linda R.

; REGISTRATION NUMBER: 42,702

; REFERENCE/DOCKET INFORMATION:

; TELECOMMUNICATION INFORMATION:

; TELEPHONE: 650-324-0880

; TELEFAX: 650-324-0960

; INFORMATION FOR SEQ ID NO: 4:

; SEQUENCE CHARACTERISTICS:

; LENGTH: 782 amino acids

; TYPE: amino acid

; TOPOLOGY: linear

; MOLECULAR WEIGHT: protein

; HYDROTHERMAL: NO

; ORIGINAL SOURCE:

; ORGANISM: homo sapiens

; INDIVIDUAL ISOLATE: GM-CSF-Her-2 fusion protein; Fig. 8

US-09-146-283-4

Query Match 11.3% Score 88; DB 2; Length 782;  
Best Local Similarity 23.1%; Pred. No. 1.2;  
Matches 34; Conservative 14; Mismatches 43; Indels 56; Gaps 7;

QY 5 PLAPCRPINATLAV---EKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPQVVCNVR 61  
DB 562 PCHEQCPQNGSVTCGPEADQCVAC-----ANX 591

QY 62 DVRESIRLPCPGVNVVSYVAL-----SCQ-CAL-CRSTTDCGPKDHLPTCD 112  
DB 592 DPPFCVAR---CPGKVKPDLSTYMPINKFPEDEGACQPCPINCTHSCVDL----- 637

QY 113 DPRFQSSSSKAPPLSPSPRLPGPS 139  
DB 638 DKGCPAQBPASPLTSLEAPSPSPS 664

RESULT 123

US-09-146-283-4

; Sequence 4, Application US/09146283

; Patent No. 5976546

; GENERAL INFORMATION:

; APPLICANT: Laus, Reiner

; APPLICANT: Ruegg, Curtis L.

; TITLE OF INVENTION: Immunostimulatory Compositions

; NUMBER OF SEQUENCES: 10

; CORRESPONDENCE ADDRESS:

; ADDRESSEE: Dehlinger &amp; Associates

US-08-579-823A-4

; Sequence 4, Application US/08579823A

; Patent No. 6080409

; GENERAL INFORMATION:

; APPLICANT: Laus, Reiner

; APPLICANT: Ruegg, Curtis L.

; TITLE OF INVENTION: Immunostimulatory Composition and Method

; NUMBER OF SEQUENCES: 10

; CORRESPONDENCE ADDRESS:

; ADDRESSEE: Dehlinger &amp; Associates

; STREET: 350 Cambridge Ave. Suite 250

; CITY: Palo Alto

; STATE: CA

; COUNTRY: USA

; ZIP: 94306

; COMPUTER READABLE FORM:

; MEDIUM TYPE: Floppy disk

; COMPUTER: IBM PC compatible

; OPERATING SYSTEM: PC-DOS/MS-DOS

; SOFTWARE: Patent In Release #1.0, Version #1.25

; CURRENT APPLICATION DATA:

; APPLICATION NUMBER: US/08/579,823A

; FILING DATE: 03-DEC-1998

; CLASSIFICATION: 536

; ATTORNEY/AGENT INFORMATION:

; NAME: Judge, Linda R.

; REGISTRATION NUMBER: 42,702

; REFERENCE/DOCKET NUMBER: 7636-0010

; TELECOMMUNICATION INFORMATION:

; TELEPHONE: 650-324-0880

; TELEFAX: 650-324-0960

; INFORMATION FOR SEQ ID NO: 4:

; SEQUENCE CHARACTERISTICS:

; LENGTH: 782 amino acids

; TYPE: amino acid

; TOPOLOGY: linear

; MOLECULAR WEIGHT: protein

; HYDROTHERMAL: NO

; ORIGINAL SOURCE:

; ORGANISM: homo sapiens

; INDIVIDUAL ISOLATE: GM-CSF-Her-2 fusion protein; Fig. 8

US-08-579-823A-4

Query Match 11.3% Score 88; DB 3; Length 782;  
Best Local Similarity 23.1%; Pred. No. 1.2;  
Matches 34; Conservative 14; Mismatches 43; Indels 56; Gaps 7;

QY 5 PLAPCRPINATLAV---EKEGCPVITVNTTICAGYCPMTVRVLOGVLPALPQVVCNVR 61  
DB 562 PCHEQCPQNGSVTCGPEADQCVAC-----ANX 591

QY 62 DVRESIRLPCPGVNVVSYVAL-----SCQ-CAL-CRSTTDCGPKDHLPTCD 112  
DB 592 DPPFCVAR---CPGKVKPDLSTYMPINKFPEDEGACQPCPINCTHSCVDL----- 637

QY 113 DPRFQSSSSKAPPLSPSPRLPGPS 139  
DB 638 DKGCPAQBPASPLTSLEAPSPSPS 664

RESULT 124

US-09-344-195-4

; Sequence 4, Application US/09344195

; Patent No. 6216662

; GENERAL INFORMATION:

; APPLICANT: Laus, Reiner

; APPLICANT: Ruegg, Curtis L.

; TITLE OF INVENTION: Immunostimulatory Compositions

; NUMBER OF SEQUENCES: 10

; CORRESPONDENCE ADDRESS:

; ADDRESSEE: Dehlinger &amp; Associates

STREET: 350 Cambridge Ave. Suite 250  
CITY: Palo Alto  
STATE: CA  
COUNTRY: USA  
ZIP: 94306  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent in Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/344,195  
FILING DATE: 24-Jun-1999  
CLASSIFICATION: <unknown>  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US/09/146,283  
FILING DATE: 23-SEP-1998  
ATTORNEY/AGENT INFORMATION:  
NAME: Judge, Linda R.  
REGISTRATION NUMBER: 42,702  
REFERENCE/DOCKET NUMBER: 7636-0010.21  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 650-324-0880  
TELEFAX: 650-324-0960  
INFORMATION FOR SEQ ID NO: 4:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 1782 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
HYPOTHETICAL: NO  
ORIGINAL SOURCE:  
ORGANISM: homo sapiens  
INDIVIDUAL ISOLATE: GM-CSF-Her-2 fusion protein; Fig. 8  
SEQUENCE DESCRIPTION: SEQ ID NO: 4:  
US-09-344-195-4  
Query Match 11.38; Score 88; DB 4; Length 782;  
Best Local Similarity 21.18; Pred. No. 1.2;  
Matches 34; Conservative 14; Mismatches 43; Indels 56; Gaps 7;  
QY 5 PLRPRCPINATLAV---EKGGPCVITVTTCAGYCPMTTRVLQGVLPALPQVQVNCVR 61  
DB 562 PCHPECPQNGSVTCGPGDAQVAC-----ARHK 591  
QY 62 DVRFESIRLPCPGVNVVSYAVL-----SCQ-CAL-CRSTTDCGPKDHPITCD 112  
DB 592 DPFCYAR---CFSGVKEDLSTWPKFDEGACQPCPINTCHSCVOL----- 637  
QY 113 DPEFDSSSKAPPSLPSRLCPSS 139  
DB 638 DKGCPAZORASPLTSLAPSPSPS 664  
RESULT 125  
US-08-239-256-17  
Sequence 17, Application US/08239256  
Patent No. 5583145  
GENERAL INFORMATION:  
APPLICANT: BOEHR  
ATTORNEY/AGENT INFORMATION:  
NAME: KEENE, JEFFREY L.  
REGISTRATION NUMBER: 34,202  
REFERENCE/DOCKET NUMBER: 20296-20035.00  
TELECOMMUNICATION INFORMATION:  
ADDRESS: MORRISON & FOERSTER  
STREET: 2000 Pennsylvania Ave. N.W.  
CITY: Washington, D.C.  
COUNTRY: USA  
ZIP: 20006-1812  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/239,256  
FILING DATE: 06-MAY-1994  
CLASSIFICATION: 435  
ATTORNEY/AGENT INFORMATION:  
NAME: MURASHIGE, KATE H.  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 29500-20030.12  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (202) 887-1500  
TELEFAX: (202) 887-0763  
TELEX: 90-4030  
INFORMATION FOR SEQ ID NO: 17:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 1776 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-239-256-17  
Query Match 10.98; Score 85; DB 1; Length 42;  
Best Local Similarity 27.38; Pred. No. 0.084;  
Matches 27; Conservative 1; Mismatches 11; Indels 60; Gaps 4;  
QY 27 CIVVTTICAGYCPMTTRVLQGVLPALPQVQVNCVRVFEISIRLPCPGVNVVSYAVA 86  
DB 3 CRNTCCNCTGACN-----CNY----- 19  
QY 87 LSCQCALCRSTTDCGPKDHPITCDPFDSSSSKAP 125  
DB 20 -ACQCALC-----TCCD-REFDSSSSKAP 41  
RESULT 126  
US-08-485-449-5  
Sequence 5, Application US/08485449  
Patent No. 5824789  
GENERAL INFORMATION:  
APPLICANT: VANDENBERG, DAVID  
TITLE OF INVENTION: HEMATOPOIETIC GROWTH FACTORS, NUCLEOTIDE  
TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS, NUCLEOTIDE  
TITLE OF INVENTION: THERBOF  
NUMBER OF SEQUENCES: 7  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 755 Page Mill Road  
CITY: Palo Alto  
STATE: California  
COUNTRY: USA  
ZIP: 94304-1018  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/485,449  
CLASSIFICATION: 536  
ATTORNEY/AGENT INFORMATION:  
NAME: KOSKI, ANTOINETTE F.  
REGISTRATION NUMBER: 34,202  
REFERENCE/DOCKET NUMBER: 20296-20035.00  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (415) 813-5600  
TELEFAX: (415) 494-0792  
TELEX: 706141  
INFORMATION FOR SEQ ID NO: 5:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 1776 amino acids  
TYPE: amino acid

STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-485-449-5

Query Match 10.9%; Score 84.5; DB 2; Length 376;  
Best Local Similarity 28.3%; Pred. No. 1.1;  
Matches 52; Conservative 18; Mismatches 55; Gaps 12;

QY 8 PRCP-----INATLAVEKECP-----VCITVN--TTICAGYC--PTMT 43  
DB 5 PRCPGLAGLLFLALSALSNEILGLKPGEPPLNTVCLTSLGSLKRLGLCLRPDT 64  
QY 44 -RVLGVLPAPOVYCNTRDVFESIRLP-----CPRGVNPV-----VS 82  
DB 65 ASALQGLHIVHCCQHQHQRMCSALEGGRLPHISAILKRGFSFSLAAGYM 124  
QY 83 YAVALSOCALCRSTTDCGK---GPKDHLTCDDPRFODSSSKAPPSLP--SPSLR 137  
DB 125 HAVATA--CSLGLVSCGCGMGSGEQDR-LRAKLQLQALSRLKSPSPSPGSPS--PG 179  
QY 138 PSDT 141  
DB 180 PQDT 183

## RESULT 127

US-08-761-277A-45  
; Sequence 45; Application US/08761277A  
; Patent No. 5972334  
; GENERAL INFORMATION:  
; APPLICANT: Denney Jr., Dan W.  
; TITLE OF INVENTION: Vaccines For Treatment Of Lymphoma And  
; TITLE OF INVENTION: Leukemia  
; NUMBER OF SEQUENCES: 80  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Medien & Carroll, LLP  
; STREET: 220 Montgomery Street, Suite 2200  
; CITY: San Francisco  
; STATE: California  
; COUNTRY: United States Of America  
; ZIP: 94104  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; COMPUTER: IBM PC compatible  
; OPERATING SYSTEM: PC-DOS/MS-DOS  
; SOFTWARE: Patent In Release #1.0, Version #1.30  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/08/761.277A  
; FILING DATE: 06-DEC-1996  
; CLASSIFICATION: 44  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: US 08/644,664  
; FILING DATE: 01-MAY-1996  
; ATTORNEY/AGENT INFORMATION:  
; NAME: MacKnight, Kamrin T.  
; REGISTRATION NUMBER: 38,230  
; REFERENCE/DOCKET NUMBER: GENITOPB-02406  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: (415) 705-8410  
; TELEFAX: (415) 397-8338  
; INFORMATION FOR SEQ ID NO: 45:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 377 amino acids  
; TYPE: amino acid  
; TOPOLOGY: linear  
; MOLECULE TYPE: protein  
US-08-761-277A-45

Query Match 10.9%; Score 84.5; DB 2; Length 377;  
Best Local Similarity 28.9%; Pred. No. 1.1;  
Matches 52; Conservative 9; Mismatches 62; Indels 57; Gaps 13;

QY 1 PSKEPLRPRCPINATLAVEKEC-----PVCITVNTTICAGYCTMTRVLGVL-LP 51

DB 6 PSVFFLAPCSRSTSGGTAA--LQCLVKDYFPEPTVSNMNSGALTSGVHTFPAVLQSSGLY 63  
QY 52 ALPOVW-----CNYR-----DVFESIRLP-----CPRGVNPVVSIA 84  
DB 64 SLSSVVVPSSSLSLQTTTCNVNHNKPSKTKYDKRVE-LKTPLDGDTTHTCPRCP----- 117  
QY 85 VALSQCOC-ALCHSTTTCGGRK--DHELTCDPRFODSSSKAPP--PSLSPSRLLGPS 139  
DB 118 --KSCDTTPPCFR----CPPEKSCDTPPC--PRCPPEKSCDTPPCPCPAPELLGPS 169

## RESULT 128

US-08-485-449-2  
; Sequence 2; Application US/08485449  
; Patent No. 5824789  
; GENERAL INFORMATION:  
; APPLICANT: BERG, DAVID  
; TITLE OF INVENTION: HEMATOPOIETIC GROWTH FACTORS, NUCLEOTIDE  
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS AND METHODS OF USE  
; NUMBER OF SEQUENCES: 7  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: MORRISON & FOERSTER  
; STREET: 755 Page Mill Road  
; CITY: Palo Alto  
; STATE: California  
; COUNTRY: USA  
; ZIP: 94304-1018  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: Floppy disk  
; COMPUTER: IBM PC compatible  
; OPERATING SYSTEM: PC-DOS/MS-DOS  
; SOFTWARE: Patent In Release #1.0, Version #1.30  
; CURRENT APPLICATION DATA:  
; APPLICATION NUMBER: US/08/485,449  
; FILING DATE:  
; CLASSIFICATION: 536  
; ATTORNEY/AGENT INFORMATION:  
; NAME: MORRISON & FOERSTER  
; REGISTRATION NUMBER: 34,202  
; REFERENCE/DOCKET NUMBER: 20296-20035.00  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: (415) 813-5600  
; TELEFAX: (415) 494-0792  
; TELEX: 706141  
; INFORMATION FOR SEQ ID NO: 2:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 389 amino acids  
; TYPE: amino acid  
; TOPOLOGY: linear  
; MOLECULE TYPE: protein  
US-08-485-449-2

Query Match 10.7%; Score 83.5; DB 2; Length 389;  
Best Local Similarity 28.6%; Pred. No. 1.4;  
Matches 48; Conservative 19; Mismatches 58; Indels 43; Gaps 10;

QY 14 NATLAVEKECP-----VCITVN--TTICAGYC--PTMT-RVLQGLVLPALPOVYCHYR 61  
DB 29 NEULGLKPGEPPLTNTVCLTSLGSLKRLGLCLRPDVTASALQGLHIVHCCQHLR 88  
QY 62 DVFESIRLP-----CPRGVNPV-----VSVALSCOCALCRSTTDC 101  
DB 89 DQWNCNLSGGLRPHISAILKRGFSFSLAAGYHAYATA--CSLGLVSCG 146  
QY 102 G----GPKDHLTCDDPRFODSSSKAPPSLP-----SRLPGSDT 141  
DB 147 GKGSGQDR-LRAKLQLQALSRLKSPSPSPGPGPDT 193

## RESULT 129

US-08-485-449-7

```
; Sequence 7, Application US/08485449
; Patent No. 5824/890N.
; APPLICANT: VANDENBERG, DAVID
; TITLE OF INVENTION: HEMATOPOIETIC GROWTH FACTORS, NUCLEOTIDE
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS AND METHODS OF USE
; NUMBER OF SEQUENCES: 7
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 755 Page Mill Road
; CITY: Palo Alto
; STATE: California
; COUNTRY: USA
; ZIP: 94304-1018
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent in Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/485,449
; FILING DATE: 06-JUN-1995
; CLASSIFICATION: 536
; ATTORNEY/AGENT INFORMATION:
; NAME: KOSKI, ANTOINETTE F.
; REGISTRATION NUMBER: 34,202
; REFERENCE/DOCKET NUMBER: 20296-20035.00
; TELEPHONE: (415) 813-5600
; TELEFAX: (415) 494-0792
; TELEX: 706141
; INFORMATION FOR SEQ ID NO: 7:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 389
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; US-08-485-449-7

Query Match 10.74; Score 83.5; DB 2; Length 389;
Best Local Similarity 28.64; Pred. No. 1.4;
Matches 48; Conservative 19; Mismatches 58; Indels 43; Gaps 10;

QY 14 NATLAVEKCP-----VCTVW--TTICAGY---PTMT-RVQLQVLPALPQWVNR 61
DB 29 NEILGLLPPEPLTQNTVYCLHSLGSLKRLQLCLLNPDVYASALQGLHIAHRCQHLR 88
QY 62 DVRFESIRLPG-----CPRGVNPV-----VSTVALSCCALCRSTTDC 101
DB 89 DQWNCNLSALEGGRLPHHSAILKRGFSATFSMLAAGVHVAATA--CSLGLVSCGC 146
QY 102 G----GPKDHPITCDPPQSSSSKAPPLSP-----SRLPGPSDT 141
DB 147 GWKSGGQDR-LRAKLQLOALSRLKSPHQLFSPGCGSPSPGQPT 193

RESULT 130
US-08-609-443B-15
; Sequence 15, Application US/08609443B
; Patent No. 5840693
; GENERAL INFORMATION:
; APPLICANT: ERIKSSON, Ulf
; APPLICANT: OLOFSSON, Birgitta
; APPLICANT: ALITALO, Kari
; APPLICANT: PAJUSOLA, Katri
; TITLE OF INVENTION: VASCULAR ENDOTHELIAL GROWTH FACTOR-B AND
; NUMBER OF SEQUENCES: 57
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Evenston, McKeown, Edwards & Lenahan, P.L.L.C.
; STREET: 1200 G Street, N.W., Suite 700
; CITY: Washington
; STATE: DC
```

```
; STATE: DC
; COUNTRY: USA
; ZIP: 20005
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent in Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/609,443B
; FILING DATE: 01-MAR-1996
; CLASSIFICATION: 435
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/397,651
; FILING DATE: 06-JUN-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/469,427
; FILING DATE: 06-JUN-1995
; APPLICATION NUMBER: US 08/569,063
; FILING DATE: 06-DEC-1995
; ATTORNEY/AGENT INFORMATION:
; NAME: EVANS, Joseph D.
; REGISTRATION NUMBER: 6,369
; REFERENCE/DOCKET NUMBER: 1064/41979CF4
; TELEPHONE: (202) 628-8800
; TELEFAX: (202) 628-8844
; INFORMATION FOR SEQ ID NO: 15:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 207 amino acids
; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; ORGANISM SOURCE: human
; TISSUE TYPE:
; US-08-609-443B-15

Query Match 10.54; Score 81.5; DB 2; Length 207;
Best Local Similarity 26.84; Pred. No. 1.1;
Matches 40; Conservative 11; Mismatches 65; Indels 33; Gaps 9;

QY 7 RPRCRP--INATLAVE-----KEGCPVCITVTITICAGYCPMTNRVLQVLPALPQVC 58
DB 44 RATCPREVVVPLVYELMTAKVLVPSCTVQR--CGGCCPD-----DGLCEVPT 92
QY 59 NYRQVPEF--STRLPQCPGVNPVSVYVALSCCALCRSTTDCGGPKDHPIT---CDD 113
DB 93 GQHQVFMOLLKIRYTPSSOLGMSLEHS-----QCE-CREKKKDSAVKPAATPHRPO 146
QY 114 PRF---QDSSSKAPPSLPSPSLRPGS 139
DB 147 PRSVPCWDSAPGAPSPADITHPTPARGPS 175

RESULT 131
US-08-569063C-15
; Sequence 15, Application US/08569063C
; Patent No. 5928939
; GENERAL INFORMATION:
; APPLICANT: ERIKSSON, Ulf
; APPLICANT: OLOFSSON, Birgitta
; APPLICANT: ALITALO, Kari
; APPLICANT: PAJUSOLA, Katri
; TITLE OF INVENTION: VASCULAR ENDOTHELIAL GROWTH FACTOR-B AND
; NUMBER OF SEQUENCES: 23
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Evenston, McKeown, Edwards & Lenahan, P.L.L.C.
; STREET: 1200 G Street, N.W., Suite 700
; CITY: Washington
; STATE: DC
```

COUNTRY: USA  
 ZIP: 20005  
 COMPUTER READABLE FORM:  
 MEDIUM TYPE: Floppy disk  
 OPERATING SYSTEM: PC-DOS/MS-DOS  
 SOFTWARE: PatentIn Release #1.0, Version #1.25  
 CURRENT APPLICATION DATA:  
 APPLICATION NUMBER: US/08/569,063C  
 FILING DATE: 06-DEC-1995  
 PRIOR APPLICATION DATA:  
 APPLICATION NUMBER: US 08/469,427  
 FILING DATE: 06-JUN-1995  
 APPLICATION NUMBER: US 08/397,651  
 FILING DATE: 01-MAR-1995  
 ATTORNEY/AGENT INFORMATION:  
 NAME: EVANS, JOSEPH D.  
 REGISTRATION NUMBER: 26,269  
 TELECOMMUNICATION INFORMATION:  
 REFERENCE/DOCKET NUMBER: 1064/41979Cp3  
 TELEPHONE: (202) 628-8800  
 TELEFAX: (202) 628-8844  
 INFORMATION FOR SEQ ID NO: 15:  
 SEQUENCE CHARACTERISTICS:  
 LENGTH: 207 amino acids  
 TYPE: amino acid  
 TOPOLOGY: linear  
 MOLECULE TYPE: Protein  
 ORIGINAL SOURCE: human  
 TISSUE TYPE: human  
 US-08-569-063C-15

Query Match 10.5%; Score 81.5; DB 2; Length 207;  
 Best Local Similarity 26.8%; Pred. No. 1.1;  
 Matches 40; Conservative 11; Mismatches 65; Indels 33; Gaps 9;  
 QY 7 RRCRR--INATLAVE-----KCCPCVCTVNTTICAGYCPMTVRVQLGVLPALPOVVC 58  
 DB 44 RATCPREVVPVLTVELMGTAKVLVPSVTVQR--CGCCCPD-----OGLECVPT 92  
 QY 59 NYRDVRF--SIRLPGCPGVNPVYSVALSCQALCRSTTDGCGPKDPLT---CDD 113  
 DB 93 GQROVRMQLMIRYPSQLGEMSLERS-----QCE--CRPKKDSAVRPAATPHRPQ 146  
 QY 114 PRF---QSSSSKAPPSLPSPSLRGS 139  
 DB 147 PRSVPCWDSAPGAPSPADITHPTAPGSPS 175

RESULT 132  
 US-08-753-247-6  
 : Sequence 6, Application US/08/53247  
 : Patent No. 6210929  
 : GENERAL INFORMATION:  
 : APPLICANT: SCHLOKAT, Uwe  
 : APPLICANT: FISCHER, Bernhard  
 : APPLICANT: FALKNER, Falko-Guenther  
 : APPLICANT: DORNER, Friedrich  
 : APPLICANT: EIBL, Johann  
 : TITLE OF INVENTION: A FUSION PROTEIN COMPRISING A FURIN  
 : TITLE OF INVENTION: DERIVATIVE OR A DERIVATIVE OF A FURIN ANALOGUE AND A  
 : TITLE OF INVENTION: HETEROLOGOUS SEQUENCE  
 : NUMBER OF SEQUENCES: 29  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESSEE: Foley & Lardner  
 : STREET: 3000 K Street, N.W., Suite 500  
 : CITY: Washington  
 : STATE: D.C.  
 : COUNTRY: USA  
 : ZIP: 20007-5109  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Floppy disk  
 : OPERATING SYSTEM: IBM PC compatible  
 : SOFTWARE: PatentIn Release #1.0, Version #1.30  
 : CURRENT APPLICATION DATA:  
 : APPLICATION NUMBER: US/08/569,063C  
 : FILING DATE: 22-NOV-1995  
 : COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk  
 COMPUTER: IBM PC compatible  
 OPERATING SYSTEM: PC-DOS/MS-DOS  
 SOFTWARE: PatentIn Release #1.0, Version #1.30  
 CURRENT APPLICATION DATA:  
 APPLICATION NUMBER: US/08/753,247  
 FILING DATE: 22-NOV-1995  
 PRIOR APPLICATION DATA:  
 APPLICATION NUMBER: AT 1928/95  
 FILING DATE: 24-NOV-1995  
 ATTORNEY/AGENT INFORMATION:  
 NAME: BENT, Stephen A.  
 REGISTRATION NUMBER: 29,768  
 REFERENCE/DOCKET NUMBER: 40433/149  
 TELECOMMUNICATION INFORMATION:  
 TELEPHONE: (202)672-5300  
 TELEFAX: (202)672-5399  
 INFORMATION FOR SEQ ID NO: 6:  
 SEQUENCE CHARACTERISTICS:  
 LENGTH: 709 amino acids  
 TYPE: amino acid  
 TOPOLOGY: linear  
 MOLECULE TYPE: protein  
 US-08-753-247-6

Query Match 10.1%; Score 78.5; DB 4; Length 709;  
 Best Local Similarity 25.3%; Pred. No. 8.5; Indels 51; Gaps 13;  
 Matches 39; Conservative 18; Mismatches 53  
 QY 1 PSKEPLPR--CRPINATLAVEKCCPVC---ITVNTTICAGYCPMTVRVQLGVLPAL- 53  
 DB 575 PEGLEVPSSCKTLTSS-----QACVCEGEGFSLHOKSCVORCP-----PGFA 619  
 QY 54 PQVCNT---RDVRESIRLPGCPGVNPVYSVALSCQALCR--RSTTDGCGPKD- 107  
 DB 620 PQVLTHTSTENDV--ETIRASVC-----APCHASCATCGPALTDCLSCPSHA 666  
 QY 108 ---RL--TCDPREDSSSKAPPSLPSPSLP 136  
 DB 667 SLDPVEQTC---ROSOSRESPPQ-QQPRLP 695

RESULT 133  
 US-08-753-247-9  
 : Sequence 9, Application US/08/53247  
 : Patent No. 6210929  
 : GENERAL INFORMATION:  
 : APPLICANT: SCHLOKAT, Uwe  
 : APPLICANT: FISCHER, Bernhard  
 : APPLICANT: FALKNER, Falko-Guenther  
 : APPLICANT: DORNER, Friedrich  
 : APPLICANT: EIBL, Johann  
 : TITLE OF INVENTION: A FUSION PROTEIN COMPRISING A FURIN  
 : TITLE OF INVENTION: DERIVATIVE OR A DERIVATIVE OF A FURIN ANALOGUE AND A  
 : TITLE OF INVENTION: HETEROLOGOUS SEQUENCE  
 : NUMBER OF SEQUENCES: 29  
 : CORRESPONDENCE ADDRESS:  
 : ADDRESSEE: Foley & Lardner  
 : STREET: 3000 K Street, N.W., Suite 500  
 : CITY: Washington  
 : STATE: D.C.  
 : COUNTRY: USA  
 : ZIP: 20007-5109  
 : COMPUTER READABLE FORM:  
 : MEDIUM TYPE: Floppy disk  
 : OPERATING SYSTEM: IBM PC compatible  
 : SOFTWARE: PatentIn Release #1.0, Version #1.30  
 : CURRENT APPLICATION DATA:  
 : APPLICATION NUMBER: US/08/753,247  
 : FILING DATE: 22-NOV-1995  
 : COMPUTER READABLE FORM:



CLASSIFICATION: 435  
PRIORITY INFORMATION DATA: AT 1928/95  
APPLICATION NUMBER: 0433/149  
FILING DATE: 24-NOV-1995  
ATTORNEY/AGENT INFORMATION:  
NAME: BENT, Stephen A.  
REGISTRATION NUMBER: 29,768  
REFERENCE/DOCKET NUMBER: 40433/149  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (202)672-5300  
TELEFAX: (202)672-5399  
TELEX: 904136  
INFORMATION FOR SEQ ID NO: 9:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 719 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-753-247-9

Query Match 10.1%; Score 78.5; DB 4; Length 713;  
Best Local Similarity 25.3%; Pred. No. 8.6;  
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRP---CRPINATLAVEKGCPCV---ITVNTTICAGYCTMTRVLOGVLPAL- 53  
DB 575 PEGLEVPPESSGCKLTSS-----QACVCEGFSLHOKSCVQRCP-----PGFA 619  
QY 54 PQVVCNY---RDVRFESIRLPGCRGVNPNVYVAVALSCCALCR-RSTTDCGGPKDH- 107  
DB 620 PQVLDYHSTENDV--ETIRASVC-----APCHASCATCGPALTDCLSCPSHA 666  
QY 108 ---PL--TCDDPRFQDSSSKAPPSLPSPRLP 136  
DB 667 SLDVPEVTCSS-----RQSQSSRESPPQ-QQPPRLP 695

RESULT 134  
US-08-753-247-12  
Sequence 12, Application US/08753247  
Patent No. 6210929  
GENERAL INFORMATION:  
APPLICANT: SCHLOKAT, Uwe  
APPLICANT: FISCHER, Bernhard  
APPLICANT: FALKNER, Falko-Guenther  
APPLICANT: CONNER, Ruedrich  
APPLICANT: EIBL, Johannes  
TITLE OF INVENTION: A FUSION PROTEIN COMPRISING A FURIN  
TITLE OF INVENTION: DERIVATIVE OR A DERIVATIVE OF A FURIN ANALOGUE AND A  
NUMBER OF SEQUENCES: 29  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Foley & Lardner  
STREET: 3000 K Street, N.W., Suite 500  
CITY: Washington  
STATE: D.C.  
COUNTRY: U.S.A.  
ZIP: 20007-5109  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent in Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/753.247  
FILING DATE: 22-NOV-1996  
CLASSIFICATION: 435  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: AT 1928/95  
FILING DATE: 24-NOV-1995  
ATTORNEY/AGENT INFORMATION:  
NAME: BENT, Stephen A.  
REGISTRATION NUMBER: 29,768

REFERENCE/DOCKET NUMBER: 40433/149  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (202)672-5300  
TELEFAX: (202)672-5399  
TELEX: 904136  
INFORMATION FOR SEQ ID NO: 12:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 719 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-753-247-12

Query Match 10.1%; Score 78.5; DB 4; Length 719;  
Best Local Similarity 25.3%; Pred. No. 8.7;  
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRP---CRPINATLAVEKGCPCV---ITVNTTICAGYCTMTRVLOGVLPAL- 53  
DB 575 PEGLEVPPESSGCKLTSS-----QACVCEGFSLHOKSCVQRCP-----PGFA 619  
QY 54 PQVVCNY---RDVRFESIRLPGCRGVNPNVYVAVALSCCALCR-RSTTDCGGPKDH- 107  
DB 620 PQVLDYHSTENDV--ETIRASVC-----APCHASCATCGPALTDCLSCPSHA 666  
QY 108 ---PL--TCDDPRFQDSSSKAPPSLPSPRLP 136  
DB 667 SLDVPEVTCSS-----RQSQSSRESPPQ-QQPPRLP 695

RESULT 135  
US-07-885-972A-2  
Sequence 2, Application US/07885972A  
Patent No. 5460950  
GENERAL INFORMATION:  
APPLICANT: Barr, Phillip J.  
APPLICANT: Klee, Anthony J.  
APPLICANT: Kaufman, Randal J.  
APPLICANT: Tekamp-Olson, Patricia  
APPLICANT: Wasley, Louise  
APPLICANT: Wong, Polly A.  
TITLE OF INVENTION: Expression of PACE in Host Cells and  
TITLE OF INVENTION: Methods of Use Thereof  
NUMBER OF SEQUENCES: 7  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Howson & Howson  
STREET: Spring House Corporate Center, P.O. Box 457  
CITY: Spring House  
STATE: Pennsylvania  
COUNTRY: U.S.A.  
ZIP: 15477  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent in Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/885.972A  
FILING DATE: 19-NOV-1990  
CLASSIFICATION: 435  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/621,092  
FILING DATE: 26-NOV-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/620,859  
FILING DATE: 29-NOV-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/621,443  
FILING DATE: 29-NOV-1990  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/621,457  
FILING DATE: 29-NOV-1990  
ATTORNEY/AGENT INFORMATION:

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: ATTORNEY/AGENT INFORMATION:
:
: REGISTRATION NUMBER: 31-215
: REFERENCE/DOCKET NUMBER: G15181A
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 215-540-9206
: TELEFAX: 215-540-5818
: INFORMATION FOR SEQ ID NO: 4:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 794 amino acids
: TYPE: AMINO ACID
: TOPOLOGY: LINEAR
: MOLECULE TYPE: Protein
:
: US-07-885-972A-4
:
: Query Match 10.1%; Score 78.5; DB 1; Length 794;
: Best Local Similarity 25.3%; Pred. No. 9.7;
: Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;
:
: QY 1 PSEBAPRR---CRPNATLAVEKCCPVC---ITVNTTICAGVCTPTRVQGVLPAL- 53
: DB 575 PEGLPVPSSCKLTSS-----QACVVCESGSLHQKSCVQKCP-----PCFA 619
:
: QY 54 PQQVNCV---RDVRESIRLPCPGVNVSTVAVALSCQALCR-RSTTDCGGPKDH- 107
: DB 620 PQLVDTYHSTENDY--ETIRASVC-----APCHASCCQGPLTDCLSQCSHA 666
:
: QY 108 ---PL--TCDDPQFQSSSKAPPSPSPSRLP 136
: DB 667 SLDLPVQGTCS-----RQSQRRESFPQ-QQPPRLP 695
:
: RESULT 137
: US-08-865-203-2
: Sequence 2, Application US/08865203
: Patent No. 5935815
:
: GENERAL INFORMATION:
: TITLE OF INVENTION: van, Willem Jan Maria
: APPLICANT: van der Wal, Arie Maria Wilhelmina
: APPLICANT: van Duljphen, Johannes Lambertus Petrus
: APPLICANT: Robbrecht, Antonius Johannes Maria
: APPLICANT: Konig, Plet Nico Maria
: TITLE OF INVENTION: Pharmaceutical Composition Having An
: TITLE OF INVENTION: Endoproteolytic Activity; A Process for
: TITLE OF INVENTION: Endoproteolytically Processing (Precursor)
: TITLE OF INVENTION: Proteins And For The (Micro)Biological
: TITLE OF INVENTION: Production Of Proteins
: NUMBER OF SEQUENCES: 12
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: HOFFMANN & BARON, LLP
: STREET: 350 Jericho Turnpike
: CITY: Jericho
: STATE: New York
: COUNTRY: U.S.A.
: ZIP: 11753
:
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: FORMAT: SYSTEM: DOS
: SOFTWARE: Patent In Release #1.24
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/865,203
: FILING DATE: 29-MAY-1997
: CLASSIFICATION: 424
: ATTORNEY/AGENT INFORMATION:
: NAME: Tran, Jessica B.
: REGISTRATION NUMBER: 40,846
: REFERENCE/DOCKET NUMBER: 294-41 DIV II
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: (516) 822-1550
: TELEFAX: (516) 822-1582
: TELEX:
:
: INFORMATION FOR SEQ ID NO: 2:

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: SEQUENCE CHARACTERISTICS:
: LENGTH: 794 amino acids
: TYPE: amino acid
: STRANDEDNESS: single
: TOPOLOGY: linear
: MOLECULE TYPE: protein
: US-08-865-203-2

Query Match 10 18: Score 78.5, DB 2: Length 794;
Best Local Similarity 25.38, P 10.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

MOY 1 PSKEPLAPR---CRPNTNATLAVKEGCPVC---TIVNTTICAGTCPTMTVRVLQGVLPAL- 53
DB 575 PEGLDVPPSSCKTKLTGS---QACVVCSEGFSLKQSCVQCCP-----PGFA 619
MOY 54 POWVCNYY---RDVRFESRILPCRGVNVVYVAVALSCCALCR-RSTDDGQPKDH- 107
DB 620 PVYLQTHYSTENDY-EYIRASVC-----APCHASCATCGPALTCLCSPSRA 666
MOY 108 ---PL--TCDDPQDSSSKKAPSLPSPRLP 136
DB 667 SLDPVEQTCS---ROSQSSRESFPO-QQPPRLP 695

RESULT 18
US-08-745-880-2 Application US/08745880
Pat. No. 5,565,425
GENERAL INFORMATION:
: APPLICANT: Barr, Phillip J.
: APPLICANT: Brake, Anthony J.
: APPLICANT: Kaufman, Rnadal J.
: APPLICANT: Tekamp-Olson, Patricia
: APPLICANT: Wasley, Louise
: APPLICANT: Wong, Polly A.
: TITLE OF INVENTION: Expression of PACE in Host Cells and
: NUMBER OF SEQUENCES: 1
: NUMBER OF SEQUENCES: 1
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: Howson & Howson
: STREET: Spring House Corporate Center, P.O. Box 457
: CITY: Spring House
: STATE: Pennsylvania
: COUNTRY: U.S.A.
: ZIP: 19477
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: PatentIn Release 1.0, Version 11.25
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/745,880
: FILING DATE: 08-NOV-1996
: CLASSIFICATION: 435
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 08/480,382
: FILING DATE: 08-NOV-1995
: APPLICATION NUMBER: US 07/885,972
: FILING DATE: 20-MAY-1992
: APPLICATION NUMBER: US 07/621,092
: FILING DATE: 26-NOV-1990
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 07/620,859
: FILING DATE: 29-NOV-1990
: APPLICATION NUMBER: US 07/621,443
: FILING DATE: 29-NOV-1990
: APPLICATION NUMBER: US 07/621,457
: FILING DATE: 30-NOV-1990
: ATTORNEY/AGENT INFORMATION:
: NAME: Bak, Mary E.

```

```

1 REGISTRATION NUMBER: 31,215
2 REFERENCE/OCCT NUMBER: G15181A
3
4 TELECOMMUNICATION INFORMATION:
5 TELEPHONE: 215-540-9206
6 TELEFAX: 215-540-5818
7
8 INFORMATION FOR SEQ ID NO: 2:
9 SEQUENCE CHARACTERISTICS:
10 LENGTH: 794 amino acids
11 TYPE: amino acid
12 CD: 1
13 TOPOLOGY: linear
14 MOLECULE TYPE: protein
15
16 US-08-745-880-2
17
18 Query Match 10.1%; Score 78.5; DB 2; Length 794;
19 Best Local Similarity 25.3%; Pred.No.9.7;
20 Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps
21
22 QY 1 PSKEPLRPL--CRPNATLAVREKGPVC---ITVNTICAGYCPMTKVLQVGLPAL- 53
23 QY 575 PGLPVPVPSGSSGCTIRSS---QAVVCEGFEFSLQSGVQICR-----PGFA 619
24 QY 54 POCVNC---RDVRESIRLPCPRGVNPNVSYALVSCQALCR-RSTTDCGSGPKDR- 107
25 Db 630 PQLDTHYSTENDV--ETIRASV-----ARCHASCTACQGPALTDLCLSCPSHA 666
26
27 QY 108 --PL--TCDDPRFOSSSKAPPSLSRSLP 136
28 Db 667 SLDPVQETCS-----RQSQSSRESPPQ-QOQPLRP 695
29
30 RESULT 139
31 US-08-745-880-4
32 Sequence 4, Application US/08745880
33 Patent No. 5965425
34 GENERAL INFORMATION:
35 APPLICANT: Barz, Phillip J.
36 APPLICANT: Barz, Anthony J.
37 APPLICANT: Kaufman, Kenneth A.
38 APPLICANT: Kaufman, Joseph Patricia
39 APPLICANT: Kaufman, Joseph Patricia
40 APPLICANT: Weiler, Louise
41 APPLICANT: Wong, Polly A.
42
43 TITLE OF INVENTION: Expression of PACE in Host Cells and
44 TITLE OF INVENTION: Methods of Use Thereof
45
46 NUMBER OF SEQUENCES: 7
47
48 CORRESPONDENCE ADDRESS:
49 ADDRESSEE: Howson & Howson
50 STREET: Spring House Corporate Center, P.O. Box 457
51 CITY: Spring House
52 STATE: Pennsylvania
53 COUNTRY: U.S.A.
54 ZIP: 19477
55
56 COMPUTER READABLE FORM:
57 MEDIUM TYPE: Floppy disk
58 COMPUTER: IBM PC compatible
59 OPERATING SYSTEM: PC-DOS/MS-DOS
60 SOFTWARE: PatentIn Release #1.0, Version #1.25
61
62 CURRENT APPLICATION DATA:
63 APPLICATION NUMBER: US/08/745-880
64 FILING DATE: 08 NOV-1996
65 CLASSIFICATION: 435
66
67 PRIOR APPLICATION DATA:
68 APPLICATION NUMBER: US 08/480,382
69 FILING DATE: 07-JUN-1995
70 APPLICATION NUMBER: US 07/885,972
71 FILING DATE: 20-MAY-1992
72 APPLICATION NUMBER: US 07/621,092
73 FILING DATE: 26-NOV-1990
74
75 PRIOR APPLICATION DATA:
76 APPLICATION NUMBER: US 07/620,859
77 FILING DATE: 26-NOV-1990
78 APPLICATION NUMBER: US 07/620,859
79 FILING DATE: 26-NOV-1990
80
81 PRIOR APPLICATION DATA:
82 APPLICATION NUMBER: US 07/621,443
83 FILING DATE: 29-NOV-1990

```

```

: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 07/621,457
: FILING DATE: 30-NOV-1990
: ATTORNEY/AGENT INFORMATION:
: NAME: Mary E.
: REGISTRATION NUMBER: 31,215
: REFERENCE/DOCKET INFORMATION:
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 215-540-9206
: TELEFAX: 215-540-5818
: INFORMATION FOR SEQ ID NO: 4:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 794 amino acids
: TYPE: amino acid
: TOPOLOGY: linear
: MOLECULE TYPE: protein
: US-08-745-880-4

Query Match 10.1%; Score 78.5; DB 2; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRPR--CRPNATLAVEKEGCPVC---ITVNTTICAGYCPMTIRVLQGVLPAL- 53
DB 575 PGLPVPSSGCKLTSS-----QACVCEGFSLHOKSCVQHC-----PGFA 619
QY 54 PIVTCNY-----RDVRFESIRLPCPGVNPVYVAVALSCQALCR-RSTTDCGGPKDH- 107
DB 620 PQVLDVHYSTENDV--ETIRASVC-----APCHASCATCGPALTDCSLCPSHA 666
QY 108 ---PL--TCDDPRFQDSSSKAPPSLPSPRLP 136
DB 667 SLDPVQTCSS---RQSQSSRESPPQ-QQPPRLP 695

RESULT 140
US-08-480-382-2
: Sequence 2, Application US/08480382
: Patent No. 5986079
: GENERAL INFORMATION:
: APPLICANT: Barr, Philip J.
: APPLICANT: Brake, Anthony J.
: APPLICANT: Kaufman, Rnadal J.
: APPLICANT: Tekamp-Olson, Patricia
: APPLICANT: Wasley, Louise
: APPLICANT: Wong, Polly A.
: TITLE OF INVENTION: Expression of PACE in Host Cells and
: METHODS OF USE THEREOF
: NUMBER OF SEQUENCES: 7
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: Howson & Howson
: STREET: Spring House Corporate Center, P.O. Box 457
: CITY: Spring House
: STATE: Pennsylvania
: COUNTRY: U.S.A.
: zip: 19477
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: Patent Release #1.0, Version #1.25
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/480,382
: FILING DATE: 07-JUN-1995
: CLASSIFICATION: 435
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 07/885,972
: FILING DATE: 20-MAY-1992
: APPLICATION NUMBER: US 07/621,092
: FILING DATE: 26-NOV-1990
: APPLICATION NUMBER: US 07/620,859
: FILING DATE: 29-NOV-1990

```

```

: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 07/621,443
: FILING DATE: 29-NOV-1990
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 07/621,457
: FILING DATE: 30-NOV-1990
: ATTORNEY/AGENT INFORMATION:
: NAME: Mary E.
: REGISTRATION NUMBER: 31,215
: REFERENCE/DOCKET INFORMATION:
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: 215-540-9206
: TELEFAX: 215-540-5818
: INFORMATION FOR SEQ ID NO: 2:
: SEQUENCE CHARACTERISTICS:
: LENGTH: 794 amino acids
: TYPE: amino acid
: TOPOLOGY: linear
: MOLECULE TYPE: protein
: US-08-480-382-2

Query Match 10.1%; Score 78.5; DB 2; Length 794;
Best Local Similarity 25.3%; Pred. No. 9.7;
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;

QY 1 PSKEPLRPR--CRPNATLAVEKEGCPVC---ITVNTTICAGYCPMTIRVLQGVLPAL- 53
DB 575 PGLPVPSSGCKLTSS-----QACVCEGFSLHOKSCVQHC-----PGFA 619
QY 54 PIVTCNY-----RDVRFESIRLPCPGVNPVYVAVALSCQALCR-RSTTDCGGPKDH- 107
DB 620 PQVLDVHYSTENDV--ETIRASVC-----APCHASCATCGPALTDCSLCPSHA 666
QY 108 ---PL--TCDDPRFQDSSSKAPPSLPSPRLP 136
DB 667 SLDPVQTCSS---RQSQSSRESPPQ-QQPPRLP 695

RESULT 141
US-08-480-382-4
: Sequence 4, Application US/08480382
: Patent No. 5986079
: GENERAL INFORMATION:
: APPLICANT: Barr, Philip J.
: APPLICANT: Brake, Anthony J.
: APPLICANT: Kaufman, Rnadal J.
: APPLICANT: Tekamp-Olson, Patricia
: APPLICANT: Wasley, Louise
: APPLICANT: Wong, Polly A.
: TITLE OF INVENTION: Expression of PACE in Host Cells and
: METHODS OF USE THEREOF
: NUMBER OF SEQUENCES: 7
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: Howson & Howson
: STREET: Spring House Corporate Center, P.O. Box 457
: CITY: Spring House
: STATE: Pennsylvania
: COUNTRY: U.S.A.
: zip: 19477
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: Patent Release #1.0, Version #1.25
: CURRENT APPLICATION DATA:
: APPLICATION NUMBER: US/08/480,382
: FILING DATE: 07-JUN-1995
: CLASSIFICATION: 435
: PRIOR APPLICATION DATA:
: APPLICATION NUMBER: US 07/885,972
: FILING DATE: 20-MAY-1992
: APPLICATION NUMBER: US 07/621,092
: FILING DATE: 26-NOV-1990
: APPLICATION NUMBER: US 07/620,859
: FILING DATE: 29-NOV-1990

```

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1 PRIOR APPLICATION DATA:
2   APPLICATION NUMBER: US 07/620,859
3   FILING DATE: 29-NOV-1990
4 PRIOR APPLICATION DATA:
5   APPLICATION NUMBER: US 07/621,443
6   FILING DATE: 29-NOV-1990
7 PRIOR APPLICATION DATA:
8   APPLICATION NUMBER: US 07/621,457
9   FILING DATE: 30-NOV-1990
10 ATTORNEY/AGENT INFORMATION:
11   NAME: BA, MARCO E.
12   REGISTRATION NUMBER: 31,215
13   REFERENCE/DOCKET NUMBER: G15181A
14 TELECOMMUNICATION INFORMATION:
15   TELEPHONE: 215-540-9206
16   TELEFAX: 215-540-5818
17 INFORMATION FOR SEQ ID NO: 4:
18   SEQUENCE CHARACTERISTICS:
19     LENGTH: 794 amino acids
20     TYPE: amino acid
21     TOPOLOGY: 1
22   MOLECULE TYPE: Protein
23   UNRESOLVED RESIDUES: 0
24   MISC. ANAL.:
25   SOURCE:
26   ORGANISM:
27   TISSUE:
28   CELL:
29   STRAIN:
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```

```

1 ATTORNEY/AGENT INFORMATION:
2 NAME: Moran, Thomas P.
3 REFERENCE NUMBER: 16,579
4 REGISTRATION/DOCKET NUMBER: 2805/41413
5 TELECOMMUNICATION INFORMATION:
6 TELEPHONE: (212) 977-9550
7 TELEFAX: (212) 977-9550
8 TELEX: 422523 COOP UI
9 INFORMATION FOR SEQ ID NO: 2:
10 SEQUENCE CHARACTERISTICS:
11 LENGTH: 794 amino acids
12 TYPE: amino acids
13 STRANDEDNESS: single
14 TOPOLOGY: linear
15 MOLECULE TYPE: protein
16
17 US-07-849-420-2
18
19 Query Match 10.1%; Score 78.5; DB 2; Length 794;
20 Best Local Similarity 25.3%; Freq. No. 9.7;
21 Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;
22
23 QY 1 PSKEQLPRP---CAPINATLAVKSGPVC---IITWTTICAGYCPMTWIVGLVPLA- 53
24
25 DB 575 PGLFVPPSSCKLTLS-----QACVCEGFSLHKSCVORCP-----PGFA 619
26
27 QY 54 POVVCNY----RDVRESIRLQPCRGVNVVSVAVSLSCALCR-RSTTDCGGPRDI- 107
28 IIII: : : : IIII:
29 DB 620 PVLDTIHYSTENDV-ETIRASVC-----APCHASCATCGPALTDLCSLPSHA 666
30
31 QY 108 ---PL--TCDPRDQSSCKAPPSPSLPSILP 136
32 IIII: : : : IIII:
33 DB 667 SLDPVDTCS-----RQSSRESRPO-QQPLPLP 695
34
35 RESULT 143
36 US-09-253-854-2
37 Sequence 2, Application US/09253854
38 Patent No. 6132717;
39 GEN INFORMATION:
40 APPLICANT: van den Ouweland, Anna Maria Wilhelmina;
41 APPLICANT: van Duljghoven, Johannes Lambertus Petrus;
42 APPLICANT: Robroek, Antonius Johannes Maria; and
43 APPLICANT: Koning, Piet NICO Maria
44 TITLE OF INVENTION: Pharmaceutical Composition Having An
45 TITLE OF INVENTION: Endoproteolytic Activity; A Process for
46 TITLE OF INVENTION: Endoproteolytically Processing (Precursor)
47 TITLE OF INVENTION: Proteins And For The (Micro)Biological
48 NUMBER OF SEQUENCES: 12
49 PRODUCTION OF PROTEINS
50 CORRESPONDENCE ADDRESS:
51 ADDRESSEE: HOFFMANN & BARON, LLP
52 STREET: 350 Jericho Turnpike
53 CITY: Jericho
54 STATE: New York
55 COUNTRY: U.S.A.
56 ZIP: 11753
57
58 COMPUTER READABLE FORM:
59 DISK: 3590 floppy disk
60 COMPETING FIRM: PC Compatible
61 OPERATING SYSTEM: PC-DOS/MS-DOS
62 SOFTWARE: PatentIn Release #1.24
63 CURRENT APPLICATION DATA:
64 APPLICATION NUMBER: US/09/253,854
65 FILING DATE: Unassigned
66 CLASSIFICATION:
67 ATTORNEY/AGENT INFORMATION:
68 NAME: Tran, Jessica H.
69 REGISTRATION NUMBER: 40,846
70 TELEPHONE: (516) 822-3550
71 TELECOMMUNICATION INFORMATION:
72 TELEPHONE: (516) 822-3582
73

```

TELEX:  
; INFORMATION FOR SEQ ID NO: 2:  
; SOURCE CHARACTERISTICS:  
; LENGTH: 794  
; TYPE: amino acid  
; STRANDEDNESS: single  
; TOPOLOGY: linear  
; MOLECULE TYPE: protein  
; US-09-253-854-2

Query Match 10.1%; Score 78.5; DB 4; Length 794;  
Best Local Similarity 25.3%; Pred. No. 9.7;  
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;  
QY 1 PSKEPLRP---CRPTNATLAVEKCPVC---ITVNTTICAGCPTMTVRLVGLPAL- 53  
DB 575 PEGLPVPSSGCKTLTSS-----QACVVCBEGFSLHOKSCVORCP-----PGFA 619  
QY 54 PQVVCNY----RDVRFESIRLPQCGVNVVYVAVALSCOCALCR-RSTTDCGGPKDH- 107  
DB 620 PQVLDTHYSTENDV--ETIRASVC-----APCHASCATCGGPAITDCLSCPSHA 666  
QY 108 ---PL--TCDDPRFODSSSKAPPSLPRLP 136  
DB 667 SLDPVEVTCs-----RQSQSSRESPPQ-QQPPRLP 695

## RESULT 144

US-08-955-424-2  
; Sequence 2, Application US/08955424  
; Patent No. 6274365  
; GENERAL INFORMATION:  
; APPLICANT: Van de Ven, Willem Jan Marie  
; APPLICANT: Van de Ouweland, Anna Maria Wilhelmina  
; APPLICANT: Van Duinhoven, Johannes Lambertus Petrus  
; APPLICANT: Konig, Piet Nico Maria  
; APPLICANT: KASLOK, Antoonus Johannes Maria  
; TITLE OF INVENTION: PHARMACEUTICAL COMPOSITION HAVING AN ENDOPROTEOLYTIC  
; TITLE OF INVENTION: ACTIVITY: A PROCESS FOR ENDOPROTEOLYTICALLY PROCESSING  
; TITLE OF INVENTION: (PRECURSOR) PROTEINS AND FOR THE (MICRO)BIOLOGICAL  
; FILE REFERENCE: SEQUENCE LISTINGS 1-12 294-41 DIV/FWC  
; CURRENT APPLICATION NUMBER: US/08/955,424  
; EARLIER FILING DATE: 1997-10-22  
; EARLIER APPLICATION NUMBER: 08/568,152  
; EARLIER FILING DATE: 1995-06-12  
; EARLIER APPLICATION NUMBER: 07/849,420  
; EARLIER FILING DATE: 1992-06-24  
; EARLIER APPLICATION NUMBER: PCT/NL90/00151  
; NUMBER OF SEQ ID NOS: 12  
; SOFTWARE: PatentIn Ver. 2.0  
; SEQ ID NO 2  
; TYPE: PRT  
; ORGANISM: Homo sapiens  
; US-08-955-424-2

Query Match 10.1%; Score 78.5; DB 4; Length 794;  
Best Local Similarity 25.3%; Pred. No. 9.7;  
Matches 39; Conservative 18; Mismatches 46; Indels 51; Gaps 13;  
QY 1 PSKEPLRP---CRPTNATLAVEKCPVC---ITVNTTICAGCPTMTVRLVGLPAL- 53  
DB 575 PEGLPVPSSGCKTLTSS-----QACVVCBEGFSLHOKSCVORCP-----PGFA 619  
QY 54 PQVVCNY----RDVRFESIRLPQCGVNVVYVAVALSCOCALCR-RSTTDCGGPKDH- 107  
DB 620 PQVLDTHYSTENDV--ETIRASVC-----APCHASCATCGGPAITDCLSCPSHA 666  
QY 108 ---PL--TCDDPRFODSSSKAPPSLPRLP 136  
DB 667 SLDPVEVTCs-----RQSQSSRESPPQ-QQPPRLP 695

RESULT 145  
US-09-095-443-2  
; Sequence 2, Application US/09095443  
; Patent No. 6274365  
; GENERAL INFORMATION:  
; APPLICANT: Plozman, Gregory  
; APPLICANT: Peles, Elor  
; TITLE OF INVENTION: DIAGNOSIS AND TREATMENT  
; TITLE OF INVENTION: OF ALP RELATED DISORDERS  
; NUMBER OF SEQUENCES: 8  
; CORRESPONDENCE ADDRESS:  
; ADDRESSEE: Lyon & Lyon  
; STREET: 633 West Fifth Street  
; CITY: Los Angeles  
; STATE: California  
; COUNTRY: U.S.A.  
; ZIP: 90071-2066  
; COMPUTER READABLE FORM:  
; MEDIUM TYPE: 3.5" Diskette, 1.44 MB  
; MEDIUM TYPE: storage  
; COMPUTER: IBM Compatible  
; OPERATING SYSTEM: IBM P.C. DOS 5.0  
; SOFTWARE: FastSeq for Windows 2.0  
; CURRENT APPLICATION NUMBER: US/09/095,443  
; FILING DATE: Herewith  
; CLASSIFICATION:  
; PRIOR APPLICATION DATA:  
; APPLICATION NUMBER: 60/049,477  
; FILING DATE: June 12, 1997  
; ATTORNEY/AGENT INFORMATION:  
; NAME: Warburg, Richard J.  
; REGISTRATION NUMBER: 32,327  
; REFERENCE/DOCKET NUMBER: 235/055  
; TELECOMMUNICATION INFORMATION:  
; TELEPHONE: (213) 955-0400  
; TELEFAX: (213) 955-0440  
; INFORMATION FOR SEQ ID NO: 2:  
; SEQUENCE CHARACTERISTICS:  
; LENGTH: 1274 amino acids  
; TYPE: amino acid  
; STRANDEDNESS: single  
; TOPOLOGY: linear  
; MOLECULE TYPE: peptide  
; US-09-095-443-2

Query Match 10.1%; Score 78.5; DB 4; Length 1274;  
Best Local Similarity 31.0%; Pred. No. 17;  
Matches 31; Conservative 12; Mismatches 38; Indels 19; Gaps 5;  
QY 40 PTMTVRLVGLPALPQVVCNYVDVRFESIRLPQCGVNVVYVAVALSCOCALCRSTT 99  
DB 651 PLHTLPYGP--PAQDPLPAHSGALPFPF---PGPPQPPHPLAYGAPS-----T 695  
QY 100 DCGPKDPLTCDPRFODSSSKAPPSLP-PPSRLP 138  
DB 696 RPKGQPAQLTNGP---SSAQGSTPSPLVPSAPSPGP 732

## RESULT 146

US-08-484-438-8  
; Sequence 8, Application US/08484438  
; Patent No. 5811098  
; Patent No. 5811098 5780031  
; GENERAL INFORMATION:  
; APPLICANT: Plozman, Gregory D.  
; APPLICANT: Culouscou, Jean-Michel  
; APPLICANT: Shoyab, Mohammed  
; APPLICANT: Stegall, Clay B.

```

; APPLICANT: Hellström, Inggerd
; APPLICANT: Hellström, Karl E.
; TITLE OF INVENTION: HEMA HUMAN RECEPTOR TYROSINE KINASE
; NUMBER OF SEQUENCES: 42
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Penle & Edmonds
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: U.S.A.
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.25
; CURRENT APPLICATION DATA: US/08/484,438
; APPLICATION NUMBER: US/08/484,438
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 530
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/323,442
; FILING DATE: 14-OCT-1994
; APPLICATION NUMBER: US 08/150,704
; FILING DATE: 10-NOV-1993
; CLASSIFICATION: 530
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/981,165
; FILING DATE: 24-NOV-1992
; CLASSIFICATION: 530
; ATTORNEY/AGENT INFORMATION:
; NAME: Mirock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 5624-230
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 696-8090
; TELEFAX: 66141 PENIE
; TEXT: 66141 PENIE
; INFORMATION FOR SEQ ID NO: 8:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1255 amino acids
; TYPE: amino acid
; STRANDEDNESS: unknown
; TOPOLOGY: unknown
; MOLECULE TYPE: protein
; US-08-484-438-8

Query Match 9.7%; Score 75.5; DB 2; Length 1255;
Best Local Similarity 26.2%; Pred. No. 31;
Matches 38; Conservative 13; Mismatches 47; Indels 47; Gaps 9;

QY 10 CRPNTATLAVKGGCPVITVTTCAGVCPPTTRVLQGV-----LPAIPQ----- 55
Db 511 CHOLCARRALLGSGPTCVNCVQFLEGOECYECRVVLRHGLPCHPCQCPQ 570
QY 56 -----VVC-NYRDVRFESIRLPGCPGVNPNVSTAVAL-----SCO-CA 92
Db 571 NGSVTCFGEADOCVACARYKDPFPCVAR---CPGKVKPDLSTYMPINKEPDEGACQPCP 627
QY 93 L-CRRSTTDC---GGPKDH---PLT 110
Db 628 INCHTSCVLDKGGCPAEGASPUT 652

RESULT 147
US-08-347-594A-2
; Sequence 2, Application US/08347594A
; Patent No. 5849536
; GENERAL INFORMATION:
; APPLICANT: Garfinkel, Leonard
; APPLICANT: Richter, Tamar
; TITLE OF INVENTION: CLONING AND PRODUCTION OF HUMAN VON
; WILLEBRAND FACTOR GPIIb BINDING DOMAIN POLYPEPTIDES AND

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; TITLE OF INVENTION: METHODS OF USING SAME
; NUMBER OF SEQUENCES: 4
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: John P. White
; STREET: 1185 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent in Release #1.0, Version #1.25
; CURRENT APPLICATION DATA: US/08/347,594A
; APPLICATION NUMBER: US/08/347,594A
; FILING DATE: 08-SEP-1994
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: White, John P.
; REGISTRATION NUMBER: 28,678
; REFERENCE/DOCKET NUMBER: 36537-B2
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 212-278-0400
; TELEFAX: 212-391-0525
; INFORMATION FOR SEQ ID NO: 2:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 2050 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-347-594A-2

Query Match 9.7%; Score 75.5; DB 2; Length 2050;
Best Local Similarity 23.4%; Pred. No. 55;
Matches 39; Conservative 15; Mismatches 58; Indels 55; Gaps 9;

QY 1 PSKEPLRRCGRINA-TLAVKEG-----CPVCI-----TWNTICAGVC 39
Db 1476 POKVLESCVPEEACTGIGEDCVHQFLEAVVDPHQPCOICTCLSGRVNCT--TOPC 1533
QY 40 PT-----MTRVLQVLPAPOVYVYRDVRFESIRLPGCPGVNPNVSTAVALS 89
Db 1534 PTAKPTGCEVARELRQADQCCPEYECVDCVSCDLPVPVHCERGLQPTLT----- 1586
QY 90 OCALCRRTTDCGGPKDHPLTCDPRFDQSSSSKAPPSLPSPSLP 136
Db 1587 NPGEKRNFT-CACRKE-----ECKRVSPSPCP-PHRLP 1618

RESULT 148
US-08-509-024-7
; Sequence 7, Application US/08509024B
; Patent No. 6291207
; GENERAL INFORMATION:
; APPLICANT: SPEAR, Patricia G.
; APPLICANT: MONTGOMERY, Rebecca I.
; TITLE OF INVENTION: HERPES VIRUS ENTRY RECEPTOR PROTEIN
; FILE OF INVENTION: 0290-1
; CURRENT APPLICATION NUMBER: US/08/509,024B
; CURRENT FILING DATE: 1995-07-25
; NUMBER OF SEQUENCES: 7
; SOFTWARE: Patent in Ver. 2.0
; SEQ ID NO: 7
; LENGTH: 419
; TYPE: PRT
; ORGANISM: Homo sapiens
; US-08-509-024-7

Query Match 9.7%; Score 75; DB 4; Length 419;
Best Local Similarity 21.9%; Pred. No. 10;
Matches 42; Conservative 12; Mismatches 72; Indels 66; Gaps 9;

```

Qy	1	PSEFLDPPRCRINATLAVEKECP-----VCIWNTTICAGYCTPRNV--LQG 48
Db	33	PCYAPALPSCK--EDEYPVGSECCPNCSPGYRVEAKGELGTVCPE-CPPTCTIHLING 89
Qy	49	VLPALPQWCN----YVDFEFESIRLPCPGNVPVNSVAVALSC-----QCALCRHST 98
Db	90	LSKCIQLQCCQCPANGULASR-----NCSRTENAVGCCSPGHECIVQDGSDHCAACRAY 142
Qy	79	TDCGQKDHPLTCDPFRQSSSSKAPP-----P 137
Db	143	TSSPQQR----VKGQTESQDTQLQCPCPGTFSPNGLSECCQHTKCRTHKTVAPSTCSAP 199
Qy	120	SLPSPSSPSS 139
Db	200	TCEPPELLAGLGS 211

RESULT 149

US-09-333-279-7      Application US/09333279  
Sequence 7,      Patent No. 6303336  
GENERAL INFORMATION:  
APPLICANT: SPGAR, Patricia G.  
APPLICANT: MONTOMERY, Rebecca I.  
TITLE OF INVENTION: HERPES VIRUS EXPRESSION VECTOR  
FILE REFERENCE: 0390-1  
CURRENT APPLICATION NUMBER: US/09/333-279-7  
CURRENT FILING DATE: 1999-06-15  
CURRENT PRIORITY NO: 7  
SOURCE: SQ ID NO: 7  
SQ ID NO: 7 Patent Ver. 2.0  
LENGTH: 419  
TYPE: PRT  
US-09-333-279-7      ORGANISM: Homo sapiens

Query Match 9.7%; Score 75; DB 4; Length 419;  
Best Local Similarity 21.9%; Pred. No. 10;  
Matches 42; Conservative 12; Mismatches 72; Indels 66; Gaps 9;

QY	1	PSEKLPAPKCPINATLAVKBCGP-----VLTNNTICAGYCTPTNRV---LOG 48
DB	33	PCYANALPSCK--EDDEYVGSSECPKCSGYRKEAGELGTCTVCEP-CIPGTIYAILHG 89
QY	49	VLPALPOVNCN---YVDFEFESILRCPGNGVNVSTVAALSC-----OCALCRST 98
DB	90	LSKCIQCQCQCDPMANGLRASR-----NCSRTENAVCGGSPGHFCIVDDGDHCAACRAVA 142
QY	9	TDGCGPKDHPLETCDDPFRQSSSSKAPP-----P 127
DB	143	TSSPQR-----VQKGTESDITLCQCPPTFSPTNTEBCQHQTKRHKTIVAPSTCSAP 199
QY	128	SLSPSSALPQS 139
DB	200	TCPPPELLAGPS 211

**RESULT 150**

```

US-08-7155-041A-2, Application US/08735041A
Patent No. 5914251
GENERAL INFORMATION:
APPLICANT: Farrell, Catherine L.
APPLICANT: Martin, Francis H.
APPLICANT: Takovetz, Rachel
TITLE OF INVENTION: PLACENTIN-DER
TITLE OF INVENTION: FACTOR
NUMBER OF SEQUENCES: 12
COMPLETION ADDRESS:
ADDRESSES:
STREET: 1840 De Havilland Drive
CITY: Thousand Oaks

```

STATE: California  
COUNTRY: USA  
ZIP: 91320-1769  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release 11.0, Version 11.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: 58/08735,041A  
FILING DATE: 22-OCT-1996  
CLASSIFICATION: 435  
ATTORNEY/AGENT INFORMATION:  
NAME: Mazza, Richard J.  
REGISTRATION NUMBER: 27,657  
REFERENCE/DOCKET NUMBER: A-414  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: 805.447.4112

## ; INFORMATION FOR SEQ ID NO: 2:

```

;
; SEQUENCE CHARACTERISTICS:
;
; LENGTH: 539 amino acids
;
; TYPE: amino acid
;
; STRANDEDNESS: single
;
; TOPOLOGY: linear
;
; MOLECULE TYPE: protein
;
US-08-735-041A-2

```

Query Match 9.60; Score 74.5; DB 2; Length 539;  
Best Local Similarity 23.20; Pred. No. 15;  
Matches 36; Conservative 11; Mismatches 49; Indels 59; Gaps 8;

Qy	1	PSKEPLDRC--BPNTATLAVKGGPCNCTIVTATGCTGCTATRVGLGVLNLPDVC	58
Db	240	PARTPSSPRCSGHVNEVFLA-----TNNMKCP--CGTKPPSSRPTSPQATS	288
Qy	59	NYRDVRFSETRIGCGPGNVPVSYAVALSCQALC-----RSTTDCGG	103
Db	289	SN-----TSLQGLQIPEG-----CACEAAPELMALEESRNLTDG-	328
Qy	104	PKRHPTCDPRDQSSSKAD--PSPSPSDSLP	136
Db	329	-----KPEAKSSPTNTPTVPAEGPSPASRP	354

RESULT 151

```

: US-09-190-476B-2
: Sequence 2, Application US/09190476B
: Patent No. 6025204
: GENERAL INFORMATION:
: APPLICANT: Farrell, Catherine L.
: APPLICANT: Martin, Francis H.
: APPLICANT: Taskowitz, Rachel
: TITLE OF INVENTION: PLACENTAL-DERIVED PROSTATE GROWTH
: FACTOR
: NUMBER OF PAGES: 12
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: Angen Inc.
: STREET: 1840 De Havilland Drive
: CITY: Thousand Oaks
: STATE: California
: COUNTRY: USA
: ZIP: 91320-1789
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: Patentin Release #1.0, Version #1.30
: CURRENT APPLICATION DATA:
: PUBLICATION NUMBER: US/09/190,476B
: FILING DATE:
: CLASSIFICATION:
: PRIOR APPLICATION DATA:

```



APPLICATION NUMBER: US 08/735,041  
FILING DATE: 22-OCT-1996  
ATTORNEY/AGENT INFORMATION:  
NAME: Mazza, Richard J.  
REGISTRATION NUMBER: 27,657  
REFERENCE/DOCKET NUMBER: A-414  
TELEPHONE: 805.499.6751  
TELEFAX: 805.499.6751  
INFORMATION FOR SEQ ID NO: 2:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 539 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: Protein  
US-09-190-4768-2

Query Match  
Best Local Similarity 23.2%; Pred. No. 15;  
Matches 36; Conservative 11; Mismatches 49; Indels 59; Gaps 8;

QY 1 PSKEPLRPRC--RPINATLAVEKEGCPVITNTICAGYCTMTRVLOGVLPALPOVVC 58  
DB 240 PARTPSSPCSGHPVNFVLA-----TNAMMCP--COTWKPSTSSRPTSPQATS 288  
QY 59 NYRDVRFESIRLPGCGVNPVYVAVALSCCALC-----RSTTDCGG 103  
DB 289 SW-----TSQLQLGQLEPG-----CAECNAAPELANGALELESRSNSTLDPG- 328  
QY 104 PKDRPLTCDPFRQDSSSSKAP--PPSLPSPSRLP 136  
DB 329 -----KPMKSPNTTTPHVAEGPEASRPP 354

RESULT 152  
US-09-190-889A-2  
Sequence 2, Application US/09190889A  
Patent No. 6075008  
GENERAL INFORMATION:  
APPLICANT: Farrell, Catherine L.  
APPLICANT: Martin, Francis H.  
APPLICANT: Yabkowitz, Rachel  
TITLE OF INVENTION: PLACENTAL-DERIVED PROSTRATE GROWTH  
NUMBER OF SEQUENCES: 12  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Angen Inc.  
CITY: Thousand Oaks  
STATE: California  
COUNTRY: USA  
ZIP: 91320-1789  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PC-REVEL, Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/190.889A  
FILING DATE: 22-OCT-1996  
CLASSIFICATION:  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 08/735,041  
FILING DATE: 22-OCT-1996  
ATTORNEY/AGENT INFORMATION:  
NAME: Mazza, Richard J.  
REGISTRATION NUMBER: 27,657  
REFERENCE/DOCKET NUMBER: A-414  
TELEPHONE: 805.499.6751  
TELEFAX: 805.499.6751  
INFORMATION FOR SEQ ID NO: 2:

SEQUENCE CHARACTERISTICS:  
LENGTH: 539 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: Protein  
US-09-190-889A-2

Query Match  
Best Local Similarity 23.2%; Pred. No. 15;  
Matches 36; Conservative 11; Mismatches 49; Indels 59; Gaps 8;

QY 1 PSKEPLRPRC--RPINATLAVEKEGCPVITNTICAGYCTMTRVLOGVLPALPOVVC 58  
DB 240 PARTPSSPCSGHPVNFVLA-----TNAMMCP--COTWKPSTSSRPTSPQATS 288  
QY 59 NYRDVRFESIRLPGCGVNPVYVAVALSCCALC-----RSTTDCGG 103  
DB 289 SW-----TSQLQLGQLEPG-----CAECNAAPELANGALELESRSNSTLDPG- 328  
QY 104 PKDRPLTCDPFRQDSSSSKAP--PPSLPSPSRLP 136  
DB 329 -----KPMKSPNTTTPHVAEGPEASRPP 354

RESULT 153  
US-09-190-9388-2  
Sequence 2, Application US/091909388  
Patent No. 6197939  
GENERAL INFORMATION:  
APPLICANT: Farrell, Catherine L.  
APPLICANT: Yabkowitz, Rachel  
TITLE OF INVENTION: PLACENTAL-DERIVED PROSTRATE GROWTH  
NUMBER OF SEQUENCES: 12  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Angen Inc.  
CITY: Thousand Oaks  
STATE: California  
COUNTRY: USA  
ZIP: 91320-1789  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PC-REVEL, Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/190.9388  
FILING DATE: 12-NOV-1998  
CLASSIFICATION: <Unknown>  
ATTORNEY/AGENT INFORMATION:  
NAME: Mazza, Richard J.  
REGISTRATION NUMBER: 27,657  
REFERENCE/DOCKET NUMBER: A-414  
TELEPHONE: 805.499.6751  
TELEFAX: 805.499.6751  
INFORMATION FOR SEQ ID NO: 2:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 539 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
MOLECULE TYPE: Protein  
SEQUENCE DESCRIPTION: SEQ ID NO: 2:  
US-09-190-9388-2

Query Match  
Best Local Similarity 23.2%; Pred. No. 15;  
Matches 36; Conservative 11; Mismatches 49; Indels 59; Gaps 8;

QY 1 PSKEPLRPRC--RPINATLAVEKGCPCVCTVNTTICAGYCTMTVRLQVLPALPOVVC 58  
DB 240 PARTSPSRCSGHPVNFVLEA-----TNNAMMCP--CCTWKPPSTSSRPTSPQATS 288  
QY 59 NYRDVRESIRLPCGPRGVNPNVSYAVALSCOCALC-----RRSTTDCGG 103  
DB 289 SW-----TSQLQGLPFG-----CAECAAAPELAMGALESRNSTLDPG- 328  
QY 104 PKDHLTCDDPRFQDSSSSKAP--PPSLPSPSRLP 136  
DB 329 -----KPEMKKSPNTTTPHVPAGPEASRPP 354

## RESULT 154

PCT-US95-09261-2

Sequence 2, Application PC/TUS9509261

GENERAL INFORMATION:

APPLICANT: NAME: BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM

APPLICANT: STREET: 201 West 7th Street

APPLICANT: CITY: Austin

APPLICANT: STATE: Texas

APPLICANT: COUNTRY: United States of America

APPLICANT: POSTAL CODE: 78701

APPLICANT: TELEPHONE NO: (512)499-4462

APPLICANT: TELEFAX: (512)499-4523

TITLE OF INVENTION: METHODS AND COMPOSITIONS FOR THE EXPRESSION OF

NUMBER OF SEQUENCES: 2

TITLE OF INVENTION: A BONE AND PROSTATE DERIVED GROWTH FACTOR

NUMBER OF SEQUENCES: 2

CORRESPONDENCE ADDRESS:

ADDRESS: Arnold, White &amp; Durkee

CITY: Houston

STATE: Texas

COUNTRY: UNITED STATES OF AMERICA

ZIP: 77210

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

OPERATING SYSTEM: PC-DOS/MS-DOS/ASCII

SOFTWARE: Patent Release #1.0, Version #1.30

CURRENT APPLICATION DATA:

APPLICATION NUMBER: PCT/US95/09261

FILING DATE: CONCURRENTLY HERewith

CLASSIFICATION:

PRIOR APPLICATION DATA:

APPLICATION NUMBER: US 08/283,701

FILING DATE: 01-AUG-1994

CLASSIFICATION:

ATTORNEY/AGENT INFORMATION:

NAME: SERICH GARY L

REGISTRATION NUMBER: 34,430

REFERENCE/DOCKET NUMBER: UTFC422P--

TELECOMMUNICATION INFORMATION:

TELEPHONE: (512) 418-3000

TELEFAX: (713) 789-2679

TELEX: 79-0924

INFORMATION FOR SEQ ID NO: 2:

SEQUENCE CHARACTERISTICS:

LENGTH: 539 amino acids

TYPE: amino acid

TOPOLOGY: linear

MOLECULE TYPE: protein

PCT-US95-09261-2

## Query Match

Best Local Similarity 23.2%; Pred. No. 15;

Matches 36; Conservative 11; Mismatches 49; Indels 59; Gaps 8;

QY 1 PSKEPLRPRC--RPINATLAVEKGCPCVCTVNTTICAGYCTMTVRLQVLPALPOVVC 58

DB 240 PARTSPSRCSGHPVNFVLEA-----TNNAMMCP--CCTWKPPSTSSRPTSPQATS 288

QY 59 NYRDVRESIRLPCGPRGVNPNVSYAVALSCOCALC-----RRSTTDCGG 103  
DB 289 SW-----TSQLQGLPFG-----CAECAAAPELAMGALESRNSTLDPG- 328  
QY 104 PKDHLTCDDPRFQDSSSSKAP--PPSLPSPSRLP 136  
DB 329 -----KPEMKKSPNTTTPHVPAGPEASRPP 354

## RESULT 155

US-08-976-255-11

Sequence 11, Application US/08976255

Patent No. 6136581

GENERAL INFORMATION:

APPLICANT: JODO, Keith E.

APPLICANT: PLOWMAN, Gregory

TITLE OF INVENTION: KINASE GENES AND USES

NUMBER OF SEQUENCES: 53

CORRESPONDENCE ADDRESS:

ADDRESS: 633 West Fifth Street

CITY: Suite 4700

STATE: Los Angeles

COUNTRY: U.S.A.

ZIP: 90071-2066

COMPUTER READABLE FORM:

MEDIUM TYPE: 3.5" Diskette, 1.44 Mb

OPERATING SYSTEM: IBM P.C. DOS 5.0

SOFTWARE: FastSeq for Windows 2.0

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/976,255

FILING DATE: No. 6136581ember 21, 1997

CLASSIFICATION: 435

PRIOR APPLICATION DATA:

APPLICATION NUMBER: 60/031,675

ATTORNEY/AGENT INFORMATION:

NAME: WATBURG, Richard J

REGISTRATION NUMBER: 32,327

REFERENCE/DOCKET NUMBER: 229/182

TELECOMMUNICATION INFORMATION:

TELEPHONE: (213) 489-1600

TELEFAX: (213) 955-0440

TELEX: 67-3510

INFORMATION FOR SEQ ID NO: 11:

SEQUENCE CHARACTERISTICS:

LENGTH: 1384 amino acids

TYPE: amino acid

TOPOLOGY: linear

MOLECULE TYPE: Protein

US-08-976-255-11

## Query Match

Best Local Similarity 25.4%; Pred. No. 44;

Matches 32; Conservative 10; Mismatches 45; Indels 39; Gaps 6;

QY 52 ALPOVVCNRYDRESIRLPCGPRGVNPNVSYAVALSCOCALC-----YAVALSOCALCRRSTTDC 101

DB 499 APTATSGTATLQELCAPDAGPAGPVVPLSANSFSLGSEYFIRLZ-EANPAAGUDPDC 557

QY 102 GG-KDHELTCDPRFQDSSSSKAP--PPSLP-----RRSTTDC 133

DB 558 AGCAPSPATADQDDSDGTAASLANEPLLGHGPPVDPVWNGRDYPRRLDPLCP 617

QY 134 RLPGPS 139

DB 618 RSPSPS 623

Fri Oct 11 17:40:47 2002

us-09-813-398-3.default.rai

Page 65

RESULT 156  
US-08-744-670-5  
Sequence 5, Application US/08744670  
Best Local Similarity 38.3%; Pred. No. 2.3;  
Matches 18; Conservative 5; Mismatches 21; Indels 3; Gaps 2;  
GENERAL INFORMATION:  
APPLICANT: Bandman, Olga  
APPLICANT: Goll, Surya K.  
APPLICANT: Murty, Lynn E.  
TITLE OF INVENTION: TUMOR-ASSOCIATED KAZAL INHIBITOR  
NUMBER OF SEQUENCES: 6  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Incyte Pharmaceuticals, Inc.  
STREET: 3174 Porter Drive  
CITY: Palo Alto  
STATE: CA  
COUNTRY: US  
ZIP: 94304  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSEQ Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/744,670  
FILING DATE: Filed Herewith  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER:  
FILING DATE:  
ATTORNEY/AGENT INFORMATION:  
NAME: Billings, Lucy J.  
REGISTRATION NUMBER: 36,749  
REFERENCE/DOCKET NUMBER: PF-0155 US  
TELEPHONE: 415-845-4166  
TELEFAX: 415-845-4166  
INFORMATION FOR SEQ ID NO: 5:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 84 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
IMMEDIATE SOURCE:  
LIBRARY: GenBank  
CLONE: 184479  
US-08-744-670-5  
Query Match  
Best Local Similarity 9.5%; Score 73.5; DB 2; Length 84;  
Matches 18; Conservative 5; Mismatches 21; Indels 3; Gaps 2;  
OY 53 LPO--VVCNVDVRFESIRLPGCPGVNPPV--SYAVALSCCALCR 96  
DB 22 IPQGLSEKRTNCSQYRLPGCPGVNPPV--SYAVALSCCALCR 68  
RESULT 157  
US-09-149-933-5  
Sequence 5, Application US/09149933  
Best Local Similarity 28.1%; Pred. No. 5;  
Matches 50; Conservative 9; Mismatches 62; Indels 57; Gaps 13;  
GENERAL INFORMATION:  
APPLICANT: Bandman, Olga  
APPLICANT: Goll, Surya K.  
APPLICANT: Murty, Lynn E.  
TITLE OF INVENTION: TUMOR-ASSOCIATED KAZAL INHIBITOR  
NUMBER OF SEQUENCES: 6  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Incyte Pharmaceuticals, Inc.  
STREET: 3174 Porter Drive  
CITY: Palo Alto  
STATE: CA  
COUNTRY: US  
ZIP: 94304  
COMPUTER READABLE FORM:

MEDIUM TYPE: Diskette  
COMPUTER: IBM Compatible  
OPERATING SYSTEM: DOS  
SOFTWARE: FASTSEQ Version 2.0  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/09/149,933  
FILING DATE: Filed Herewith  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER:  
FILING DATE:  
ATTORNEY/AGENT INFORMATION:  
NAME: Billings, Lucy J.  
REGISTRATION NUMBER: 36,749  
REFERENCE/DOCKET NUMBER: PF-0155 US  
TELEPHONE: 415-845-4166  
TELEFAX: 415-845-4166  
INFORMATION FOR SEQ ID NO: 5:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 84 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
IMMEDIATE SOURCE:  
LIBRARY: GenBank  
CLONE: 184479  
US-09-149-933-5  
Query Match  
Best Local Similarity 9.5%; Score 73.5; DB 2; Length 84;  
Matches 18; Conservative 5; Mismatches 21; Indels 3; Gaps 2;  
OY 53 LPO--VVCNVDVRFESIRLPGCPGVNPPV--SYAVALSCCALCR 96  
DB 22 IPQGLSEKRTNCSQYRLPGCPGVNPPV--SYAVALSCCALCR 68  
RESULT 158  
US-09-171-945-24  
Sequence 5, Application US/09171945  
Best Local Similarity 24.4%; Pred. No. 2.3;  
Matches 24; Conservative 5; Mismatches 21; Indels 3; Gaps 2;  
GENERAL INFORMATION:  
APPLICANT: Emery, Stephen  
APPLICANT: Copley, Clive Graham  
APPLICANT: Edge, Michael Derek  
TITLE OF INVENTION: Monoclonal Antibody to CEA, Conjugates Comprising Said  
TITLE OF INVENTION: Antibody, and their Therapeutic Use in an Adept System  
FILE REFERENCE: Monoclonal Antibody to CEA  
CURRENT APPLICATION NUMBER: US/09/171,945  
CURRENT FILING DATE: 1997-02-14  
PRIOR FILING DATE: 1997-02-14  
PRIOR APPLICATION NUMBER: GB9609405.7  
PRIOR FILING DATE: 1996-05-04  
PRIOR APPLICATION NUMBER: PCT/GB97/01165  
PRIOR FILING DATE: 1997-04-29  
NUMBER OF SEQ ID NOS: 131  
SOFTWARE: PatentIn Ver. 2.1  
SEQ ID NO 24  
LENGTH: 167  
TYPE: PRT  
ORGANISM: Artificial Sequence  
OTHER INFORMATION: Description of Artificial Sequence: humanized  
US-09-171-945-24  
Query Match  
Best Local Similarity 9.5%; Score 73.5; DB 4; Length 167;  
Matches 50; Conservative 9; Mismatches 62; Indels 57; Gaps 13;  
OY 1 PSKEPLRPRCPINATLAVEKGC-----PVCITNTTICAGYCPMTFVQLQV-LP 51  
DB 6 PSVFPLACRSSTGGTAA--LGLVLDKDYFPEPTVSMNSCALTSQVHTFPAYLQSSGLY 63

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QY      52 ALPOVY-----CNVR-----DVRESIRLP-----GCPRCVNWVSYA 84
      11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
Db      64 SLSSVTVYVSSIGTQYTCNVNHNKSNKVKDRVE-LKTPLGDTHTPCPCPEP----- 117
QY      85 VALSQC-ALCRASRTTDCGGPK--DPLTCTCDPRFOSSSSKAP--PSLSPSRLP 137
      11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11
Db      118 -KSCDTPPCPR-----CPEKPSKDTPPPC--PRCPKPSKDTPPCPCPAPELLG 167
      11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11

RESULT 159
US-08-171-945-95
/ Sequence 95, Application US/09171945
/ PCT NUMBER: 02/067595
/ FILING DATE: 1998-10-29
/ PRIORITY DATE: 1996-05-04
/ OTHER INFORMATION: Description of Artificial Sequence: humanized
/ GENERAL INFORMATION:
/ APPLICANT: Emery, Stephen
/ APPLICANT: Copley, Clive Graham
/ APPLICANT: Edge, Clive Graham
/ TITLE OF INVENTION: Monoclonal Antibody to CEA, Conjugates Comprising Said
/ TITLE OF INVENTION: Antibody, and Their Therapeutic Use in an Adept System
/ FILE REFERENCE: Monoclonal Antibody to CEA
/ CURRENT APPLICATION NUMBER: US/09/171,945
/ CURRENT FILING DATE: 1998-10-29
/ PRIORITY DATE: 1996-05-04
/ OTHER INFORMATION: Description of Artificial Sequence: humanized
/ PCT NUMBER: 02/067595
/ PRIORITY DATE: 1996-05-04
/ PRIOR APPLICATION NUMBER: GB9609405.7
/ PRIOR FILING DATE: 1996-05-04
/ PRIOR APPLICATION NUMBER: PCT/GB97/01165
/ PRIOR FILING DATE: 1997-04-29
/ NUMBER OF SEQ ID NOS: 131
/ SOFTWARE: PatentIn Ver. 2.1
/ SEQ ID NO 95
/ LENGTH: 306
/ TYPE: PRT
/ ORIGIN: Artificial Sequence
/ OTHER INFORMATION: Description of Artificial Sequence: humanized
/ US-09-171-945-95

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Query Match          9.5%: Score 73.5; DB 4: Length 306;
      Best Local Similarity 28.1%: Pred. No. 9.9;
      Matches 50; Conservative 62; Indels 57; Gaps 13;

QY      1  FSEQLRPRCPRTNATLAVKGGC-----PVCITNTTICAGTCPTMTRVLOGV-LP 51
Db      145  FSPVFLPACSRGTSGGTAA--LGCLVKDYPFEPVTVSNWSGALTSGVHTFPVQLSSGLY 202

QY      52  ALPOVY-----CNYR-----DVRFESIRLP-----GCCRGVNPVWSYA 84
Db      203  SLESEVTVFSSSLGTQTYCNVNHKPSNTKVDKRYE-LKTPIGDTHTCPCPEP----- 256

QY      85  VALSCOC-ALGRSTTCCGCK--DIPLTCCDPQDQSSSKAPP--PSLSPSRRLCP 137
Db      257  --NSCUTPPCPR---CPEPKSCDTPPC--PCPEPKSCDTPPCPCFAPFELLOG 306

RESULT 160
5242798-5
Patent No. 5242798
APPLICANT: SUTCLIFFE, J. GEROR
TITLE OF INVENTION: SYNTHETIC POLYPEPTIDES CORRESPONDING
TO RECEPTOR METHODS FOR DETECTING AND TREATING BRAIN-SPECIFIC MNAS,
RECEPTOR METHODS AND DIAGNOSTICS USING THE SAME
NUMBER OF SEQUENCES: 19
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/07/476,961
FILING DATE: 07-FEB-1990
PRIORITY APPLICATION DATA:
APPLICATION NUMBER: 58,620
FILING DATE: 03-JUN-1987
APPLICATION NUMBER: 516,136
FILING DATE: 21-JUL-1983
SEQ ID NO:5:

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: LENGTH: 318
5242798-5

Query Match          9.5%; Score 73.5; DB 6; Length 318;
Best Local Similarity 27.5%; Pred. No. 10;
Matches 36; Conservative 16; Mismatches 52; Indels 27; Gaps 7

QY   28  IVATT-----ICAGCYPTNRVLQGVLPALPVVCYNRDV-RFESIRLP--CCPR-- 75
      ||||| : | : | : | : | : | : | : | : | : | : | : | : | : |
DB   143 VTTMEREFYSRSGLLITSIUTLRGOAAPRVICTSRNLTGTSLEUFGGAHRLM 202
      ||||| : | : | : | : | : | : | : | : | : | : | : | : | : |
QY   76 -----GYNPVSVA--VALSOCALCRSTTCGGPK----DHPLCTDDRRFDSSSKA 124
      ||||| : | : | : | : | : | : | : | : | : | : | : | : | : |
DB   203 WAKIGPVGNAVFALLIAVICYTQRKKNNKTESPSFSNGDNHVLYSPFEPISGA--- 259
      ||||| : | : | : | : | : | : | : | : | : | : | : | : | : |
QY   125 PPSLSPPSLR 135
      ||||| : | : | : | : | : | : | : | : | : | : | : | : | : |
DB   260 -PDKYSEKRL 269
      ||||| : | : | : | : | : | : | : | : | : | : | : | : | : |

RESULT 161
US-08-665-647-5
: Application # 5 Application US/08665647
: Patent No. 5935403
: GENERAL INFORMATION:
: APPLICANT: Dasquez, Nickl J.
: APPLICANT: Ron, Dotz
: APPLICANT: Voronova, Anna F.
: TITLE OF INVENTION: METHODS TO IDENTIFY IMMUNOMODULATORS
: TITLE OF INVENTION: USING COGNATE INTERACTION OF PKC-THTETA
: NUMBER OF SEQUENCES: 89
: CORRESPONDENCE ADDRESS:
: ADDRESSEE: MORAN & FORESTER
: STREET: 2000 Pennsylvania Avenue, NW - Ste. 5500
: CITY: Washington
: STATE: DC
: COUNTRY: USA
: ZIP: 20006-1888
: COMPUTER READABLE FORM:
: MEDIUM TYPE: Floppy disk
: COMPUTER: IBM PC compatible
: OPERATING SYSTEM: PC-DOS/MS-DOS
: SOFTWARE: patentin Release #1.0, Version #1.30
: CURRENT APPLICATION DATA: #1.0, Version #1.30
: PUBLICATION NUMBER: US/08/665.647
: CLASSIFICATION: 435
: DATE OF FILING: 19 JUN-1996
: ATTORNEY/AGENT INFORMATION:
: NAME: Murashige, Kate H.
: REGISTRATION NUMBER: 29,959
: REFERENCE/DOCKET NUMBER: 22550-2002S.25
: TELECOMMUNICATION INFORMATION:
: TELEPHONE: (202) 887-1500
: TELEFAX: (202) 822-0168
: TELEX: 90-4030 MESNOERSWH
: INFORMATION FOR SEQ ID NO: 5:
: SEQUENCE CHARACTERISTICS:
: MATCH WITH: all amino acids
: TYPE: amino acid
: TOPOLOGY: linear
: MOLECULE TYPE: protein
: OS-08-665-647-5

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Query Match      9.5%; Score 73.5; DB 2; Length 431;
Best Local Similarity 22.4%; Pred. No. 15;
Matches 49; Conservative 18; Mismatches 60; Indels 81; Gaps 11;

QY      5  PLRCPRIINATLAEK-EGCPVCITVNTTICAGYCTPTVVL----- 46
          ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db      117 PSRRKATPINLASAIRKSSGSGASSYQVR-----PFDRVLHLLARPYRKAEILLRL 169

QY      47  -----QCVLPAIPQVV-----CNYRDVRESIR--LPCCPGCVNPPVSYAVA 86

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; PRIOR APPLICATION NUMBER: GB9609405.7
; PRIOR FILING DATE: 1996-05-04
; PRIOR APPLICATION NUMBER: PC/GB97/01165
; PRIOR FILING DATE: 1997-04-29
; NUMBER OF SEQ ID NOS: 131
; SOFTWARE: Patent Ver. 2.1

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US - OTHER INFORMATION: Description of Artificial Sequence: humanized
US - 0171-943-125

Query Match      9.5%;      Score 73.5;  DB 4;  Length 716;
Best Local Similarity 28.1%;  Pred No. 26;
Matches 50;  Conservative 9;  Mismatches 62;  Indels 57;  Gaps 13;

QY 1 PSKEPLRPRCRINATLAVKEGC-----PVCITVNTTCAGICPTNTRVLQGV-LP 51
Db 555 PSVFLPAPCRSTSGGTAA--LACLVDKFPVPTVSNNSCALTSVGHTEPAVLQSSGL 612

QY 52 ALPOWY-----QVNR-----QVRFSTRLP-----GCPRCVMPVYVA 84
Db 613 SLSSVYVPSSELGTQTTCHWHFSPNKNYKRVK-LKPLGDTTHCPRCPE-----666

QY 85 VALSCQCC-ALCRBSSTIDGGPK--DHPLTCDQPRDFQSSAKAP--PSLSPSPSLRG 137
Db 667--KSCDITPPCPDR--CPBPKSCDITPPC--PRCPKPCSDTPPCPCPCPAPELQGV 716

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1 GENERAL INFORMATION:  
2 APPLICANT: Gallo, Robert C.  
3 APPLICANT: Bryant, Joseph  
4 APPLICANT: Luardi-Iskandar, Yanto  
5 TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS  
6 TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN  
7 NUMBER OF SEQUENCES: 26  
8 CORRESPONDENCE ADDRESS:

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CLASSIFICATION: 514  
ATTORNEY/AGENT INFORMATION:  
1. NAME: JAMES E. LAGIS, JR.  
2. REGISTRATION NUMBER: 872  
3. REFERENCE/DOCKET NUMBER: 8769-018  
TELECOMMUNICATION INFORMATION:  
4. TELEPHONE: (212) 790-9090  
5. TELEFAX: (212) 869-9741/8864  
6. TELEX: 66141 PENNIE  
INFORMATION FOR SEQ ID NO: 18:  
7. SEQUENCE CHARACTERISTICS:  
8. LENGTH: 14 amino acids  
9. TYPE: amino acid  
10. SOURCE: synthetic  
11. MOLECULE TYPE: peptide  
US-08-7093-924-18

```

Query Match          9.4%; Score 73; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.34; 0; Indels 0;
Matches 14; Conservative 0; Mismatches 0; Gaps 0;

QY 46 LQGVLPALPOVCN 59
DB 1 LQGVLPALPOVCN 14

RESULT 165
US-08-709-925-18
; Sequence 18, Application US/08709925
; Patent No. 573748
; GENERAL INFORMATION:
; APPLICANT: Bryant, Joseph C.
; APPLICANT: Gallo, Robert C.
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY
; TITLE OF INVENTION: ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
; NUMBER OF SEQUENCES: 26
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds LLP
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10016-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA: US/08/709,925
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 52
; ATTORNEY/AGENT INFORMATION:
; NAME: Mistock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-017
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; TELEX: 66141 PENNIE
; INFORMATION FOR SEQ ID NO: 18:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 14 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-709-925-18

Query Match          9.4%; Score 73; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.34;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 46 LQGVLPALPOVCN 59
DB 1 LQGVLPALPOVCN 14

RESULT 166
US-08-709-948-18
; Sequence 18, Application US/08709948
; Patent No. 5319504
; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
; TITLE OF INVENTION: BY ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
; NUMBER OF SEQUENCES: 26

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; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Pennie & Edmonds LLP
; STREET: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10016-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA: US/08/709,948
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 52
; ATTORNEY/AGENT INFORMATION:
; NAME: Mistock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-016
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; TELEX: 66141 PENNIE
; INFORMATION FOR SEQ ID NO: 18:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 14 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-709-948-18

Query Match          9.4%; Score 73; DB 4; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.34;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 46 LQGVLPALPOVCN 59
DB 1 LQGVLPALPOVCN 14

RESULT 167
US-08-469-667-4
; Sequence 4, Application US/08469667
; Patent No. 573748
; GENERAL INFORMATION:
; APPLICANT: Yu, Guo-Liang
; APPLICANT: Rosen, Craig
; TITLE OF INVENTION: Colon Specific Genes and Proteins
; TITLE OF INVENTION: COLON SPECIFIC GENES
; NUMBER OF SEQUENCES: 24
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Carella, Byrne, Bain, Gilfillan, Cecchi,
; ADDRESSEE: Stewart & Olstein
; STREET: 6 Becker Farm Road
; CITY: Roseland
; STATE: NJ
; COUNTRY: USA
; ZIP: 07068-1739
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA: US/08/469,667
; FILING DATE: 06-JUN-1995
; CLASSIFICATION: 536
; ATTORNEY/AGENT INFORMATION:
; NAME: Ferraro, Gregory D.
; REGISTRATION NUMBER: 36,134
; REFERENCE/DOCKET NUMBER: 325800-435
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 201-994-1700

```

TELEFAX: 201-994-1744  
INFORMATION FOR SEQ ID NO: 4:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 235 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-469-667-4

Query Match 9.3%; Score 72; DB 1; Length 235;  
Best Local Similarity 25.5%; Pred. No. 10;  
Matches 28; Conservative 11; Mismatches 51; Indels 20; Gaps 5;

QY 1 PSKEPLRPRCPINATLAVEKGGPCVITNTTICAGYCPTM-----TRVLQGVLPALP 54  
DB 123 PNETRVP-CSTVPVTVTSYAGCTKTVLNMH--CSGSGCTFVMSAKAQAQDHSCK 179  
QY 55 QVVCNRYDRFESIRLPGCPGVNPNVSVYVALSCQALCRSTTDCGGP 104  
DB 180 EKTQSREV-----VLSCPNGSLTHTYTHIESCQ-----QDTVCGLP 218

## RESULT 168

US-09-224-110-4  
Sequence 4, Application US/09224110

Patent No. 6337195  
GENERAL INFORMATION:

APPLICANT: Yu, Guo-Liang

INVENTOR: Yu, Guo-Liang

TITLE OF INVENTION: Colon Specific Genes and Proteins

NUMBER OF SEQUENCES: 24

CORRESPONDENCE ADDRESSES:

ADDRESSEE: Carella, Byrne, Bain, Gilfillan, Cecchi,

ADDRESSEE: Stewart & Olstein

STREET: 6 Becker Farm Road

CITY: Roseland

STATE: NJ

COUNTRY: USA

ZIP: 07068-1739

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: Patent In Release #1.0, Version #1.30

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/09/224,110

FILING DATE:

CLASSIFICATION:

PRIOR APPLICATION DATA:

REFERENCE NUMBER: US/08/469,667

FILING DATE: 06 JUN 1995

ATTORNEY/AGENT INFORMATION:

NAME: Ferraro, Gregory D.

REGISTRATION NUMBER: 36,134

REFERENCE/DOCKET NUMBER: 325800-435

TELECOMMUNICATION INFORMATION:

TELEPHONE: 201-994-1700

TELEFAX: 201-994-1744

INFORMATION FOR SEQ ID NO: 4:

SEQUENCE CHARACTERISTICS:

LENGTH: 235 amino acids

TYPE: amino acid

TOPOLOGY: linear

MOLECULE TYPE: protein

US-09-224-110-4

Query Match 9.3%; Score 72; DB 4; Length 235;  
Best Local Similarity 25.5%; Pred. No. 10;  
Matches 28; Conservative 11; Mismatches 51; Indels 20; Gaps 5;

QY 1 PSKEPLRPRCPINATLAVEKGGPCVITNTTICAGYCPTM-----TRVLQGVLPALP 54  
DB 123 PNETRVP-CSTVPVTVTSYAGCTKTVLNMH--CSGSGCTFVMSAKAQAQDHSCK 179

QY 55 QVVCNRYDRFESIRLPGCPGVNPNVSVYVALSCQALCRSTTDCGGP 104  
DB 180 EKTQSREV-----VLSCPNGSLTHTYTHIESCQ-----QDTVCGLP 218

## RESULT 169

PCT-US95-07289-4

Sequence 4, Application PC/TUS9507289

GENERAL INFORMATION:

APPLICANT: Yu, Guo-Liang

INVENTOR: Yu, Guo-Liang

TITLE OF INVENTION: Colon Specific Genes and Proteins

NUMBER OF SEQUENCES: 24

CORRESPONDENCE ADDRESSES:

ADDRESSEE: Carella, Byrne, Bain, Gilfillan, Cecchi,

ADDRESSEE: Stewart & Olstein

STREET: 6 Becker Farm Road

CITY: Roseland

STATE: NJ

COUNTRY: USA

ZIP: 07068-1739

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: Patent In Release #1.0, Version #1.30

CURRENT APPLICATION DATA:

APPLICATION NUMBER: PCT/US95/07289

FILING DATE: 06 JUN 1995

CLASSIFICATION:

ATTORNEY/AGENT INFORMATION:

NAME: Ferraro, Gregory D.

REGISTRATION NUMBER: 36,134

REFERENCE/DOCKET NUMBER: 325800-265

TELECOMMUNICATION INFORMATION:

TELEPHONE: 201-994-1700

TELEFAX: 201-994-1744

INFORMATION FOR SEQ ID NO: 4:

SEQUENCE CHARACTERISTICS:

LENGTH: 235 amino acids

TYPE: amino acid

TOPOLOGY: linear

MOLECULE TYPE: protein

PCT-US95-07289-4

Query Match 9.3%; Score 72; DB 5; Length 235;

Best Local Similarity 25.5%; Pred. No. 10;

Matches 28; Conservative 11; Mismatches 51; Indels 20; Gaps 5;

QY 1 PSKEPLRPRCPINATLAVEKGGPCVITNTTICAGYCPTM-----TRVLQGVLPALP 54

DB 123 PNETRVP-CSTVPVTVTSYAGCTKTVLNMH--CSGSGCTFVMSAKAQAQDHSCK 179

QY 55 QVVCNRYDRFESIRLPGCPGVNPNVSVYVALSCQALCRSTTDCGGP 104

DB 180 EKTQSREV-----VLSCPNGSLTHTYTHIESCQ-----QDTVCGLP 218

## RESULT 170

PCT-US96-12374-2

Sequence 2, Application PC/TUS9612374

GENERAL INFORMATION:

APPLICANT: Eastern University

TITLE OF INVENTION: Herpes Virus Entry Mediator

NUMBER OF SEQUENCES:

CORRESPONDENCE ADDRESSES:

ADDRESSEE: Dresler, Goldsmith, Milnamow & Katz, Ltd.

STREET: 180 N. Stetson, Suite 4700

CITY: Chicago

STATE: Illinois

COUNTRY: U.S.A.

ZIP: 60601

COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent in Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
FILING DATE: PCT/US96/12374  
CLASSIFICATION:  
ATTORNEY/AGENT INFORMATION:  
NAME: Northrup, Thomas E.  
REGISTRATION NUMBER: 33,268  
REFERENCE/DOCKET NUMBER: NOR3446P020PC  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (312) 616-5400  
TELEFAX: (312) 616-5460  
INFORMATION FOR SEQ ID NO: 2:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 283 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
PCT-US96-12374-2

Query Match 9.3%; Score 72; DB 5; Length 283;  
Best Local Similarity 24.5%; Pred. No. 13;  
Matches 38; Conservative 13; Mismatches 68; Indels 36; Gaps 9:

QY 1 PSKEPLRPRCPINATLAVEKCP-----VCITVNTICAGYCPTRV--LOG 48  
DB 33 PCYAPALPSCK--EDEVPGSECCPKSGVRYVKEAGELTGTCPE-CPGTYIAHLNG 89  
QY 49 VLPALPOVVCN----YRDVRFESIRLPGCRGVNVPVSYAVALS-----OCALCRST 98  
DB 90 LSKCIAQOMCDPANGLRATR-----NCSRTENAVCGSPGHCITVQGDHCAACRYA 142  
QY 99 TDCGPRDEPLTCDPRFQDSSSKAPPSLPSPS 133  
DB 143 TSSPGQR--VQKGTESDITLQNCPCPTF-SPN 173

RESULT 171  
US-07-937-609-16  
Sequence 16, Application US/07937609  
Patent No. 5319073  
GENERAL INFORMATION:  
APPLICANT: WANK, Stephen A.  
TITLE OF INVENTION: CLONING AND FUNCTIONAL EXPRESSION OF CHOLECYSTOKININ RECEPTOR-ENCODING DNA  
NUMBER OF SEQUENCES: 29  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Foley & Lardner  
STREET: 1800 Diagonal Road, Suite 500  
CITY: Alexandria  
STATE: VA  
COUNTRY: USA  
ZIP: 22313-0299  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent in Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/07/937,609  
FILING DATE: 19920902  
CLASSIFICATION: 436  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/831,248  
FILING DATE: 07-FEB-1992  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/861,769  
FILING DATE: 01-APR-1992

PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/928,033  
FILING DATE: 11-AUG-1992  
ATTORNEY/AGENT INFORMATION:  
NAME: BENT, Stephen A.  
REGISTRATION NUMBER: 29,768  
REFERENCE/DOCKET NUMBER: 40399/166 NIHD  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (703) 836-9300  
TELEFAX: (703) 883-4109  
TELEX: 899149  
INFORMATION FOR SEQ ID NO: 16:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 452 amino acids  
TYPE: AMINO ACID  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-07-937-609-16

Query Match 9.3%; Score 72; DB 1; Length 452;  
Best Local Similarity 22.1%; Pred. No. 21;  
Matches 40; Conservative 15; Mismatches 48; Indels 78; Gaps 8:

QY 10 CRPINATLAVEKCPVCI-----TWNTICAGYCPTRVLOGVLPALPOVVCNVRD 62  
DB 284 CRPVTSVAGSDCCCVLPSPRSRLMTLTITPTPGVP-----GPRPQAKLAKRV 136  
QY 63 VR-----FESTIRLPGCRG-----VNPVV-- 81  
DB 337 VRMLLVTVLLFELWLPVSYVNTWRATDGGAGNALSCNPSIFHLLSYVACVNPVLYC 396  
QY 82 ----SYAVALSCCALCRSTTDCGG---KDHLTCDDPRFQDSSSKAPPSLPSPSR 134  
DB 397 FHRFRFQACLDTCARC-----CPRPRARQPLDDEP-----PTPSIASLSR 440  
QY 135 L 135  
DB 441 L 441

RESULT 172  
US-08-029-170-16  
Sequence 16, Application US/08029170  
Patent No. 6169173  
GENERAL INFORMATION:  
APPLICANT: WANK, Stephen A.  
TITLE OF INVENTION: CLONING AND FUNCTIONAL EXPRESSION OF CHOLECYSTOKININ RECEPTOR-ENCODING DNA  
NUMBER OF SEQUENCES: 32  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Foley & Lardner  
STREET: 1800 Diagonal Road, Suite 500  
CITY: Alexandria  
STATE: VA  
COUNTRY: USA  
ZIP: 22313-0299  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: Patent in Release #1.0, Version #1.25  
CURRENT APPLICATION DATA:  
APPLICATION NUMBER: US/08/029,170  
FILING DATE: 19930310  
CLASSIFICATION: 435  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/937,609  
FILING DATE: 02-SEP-1992  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/928,033  
FILING DATE: 11-AUG-1992  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 07/861,769  
FILING DATE: 01-APR-1992



```

; FILING DATE: 01-APR-1992
; PRIORITY INFORMATION DATA:
; APPLICATION NUMBER: US 07/831,248
; FILING DATE: 07-FEB-1992
; ATTORNEY/AGENT INFORMATION:
; NAME: BENT, Stephen A.
; REGISTRATION NUMBER: 29,768
; REFERENCE/DOCKET NUMBER: 40399/166 NIHD
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (703)836-9300
; TELEFAX: (703)683-4109
; TELELEX: 899149
; INFORMATION FOR SEQ ID NO: 16:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 855 amino acids
; TYPE: AMINO ACIDS
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-029-170-16

```

Query Match 9.38; Score 72; DB 4; Length 452;

Best Local Similarity 22.18; Pred. No. 21; Matches 40; Conservative 15; Mismatches 48; Indels 78; Gaps 8;

```

QY 10 CRPNATLAVKSGCPVGI-----TNTTICAGTCPTWTVLQVLPALPQVYCNVD 62
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
Db 284 CRPVTSVAGSDGCVLPKSRLEMTLTTPGVP-----GPRNQAKLAKRV 336
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
QY 63 VR-----FESIRLPQCPRG-----VNPVV-- 81
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
Db 337 VMLLVIVLFFLCMLPVVYVNTWRAFDGGAQALSGAPISFIHLISYVACVNLVYC 396
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
QY 82 -----STAVALSQCACLRSTDCGP---KDHLPTCDPFDQSSSKKAPPSLPSPR 134
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
Db 397 FWHRFQGLCTCAK-----CPRPRARQPLPDEP-----PTPSIASLR 440
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
QY 135 L 135
Db 441 L 441

```

RESULT 173

US-09-813-819-2

; Sequence 2, Application US/09813819

; Patent No. 6294368

; GENERAL INFORMATION:

; APPLICANT: MERKULOV, Gennady et al

; TITLE OF INVENTION: ISOLATED HUMAN PROTEASE PROTEINS,

; TITLE OF INVENTION: NUCLEIC ACID MOLECULES ENCODING HUMAN PROTEASE PROTEINS, AND

; TITLE OF INVENTION: USES THEREOF

; FILE REFERENCE: CLO01177

; CURRENT APPLICATION NUMBER: US/09/813,819

; NUMBER OF SEQ ID NOS: 4

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 2

; LENGTH: 855

; TYPE: PRT

; ORGANISM: Human

US-09-813-819-2

Query Match 9.38; Score 72; DB 4; Length 855;

Best Local Similarity 28.18; Pred. No. 44; Matches 47; Conservative 3; Mismatches 36; Indels 30; Gaps 4;

```

QY 58 CNTYRVFESIRLPGCPGVNPNVYVALSCQCALCRSTDCG---GPKDHLPTCD- 112
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
Db 750 COYRAAGSPSERGGP-----ORALLAGCTKASALSFAPPSRLPPDP 794
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
QY 113 -DPRFQSSSKKAPPSLPSPS-----RLPGP 138
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
Db 795 VSKRLQSGPAPKPPPPKPLPADPQGRCPGSDLPGP 830
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:

```

RESULT 174

US-09-920-048-2

; Sequence 2, Application US/09920048

; Patent No. 6313572

; GENERAL INFORMATION:

; APPLICANT: MERKULOV, Gennady et al

; TITLE OF INVENTION: ISOLATED HUMAN PROTEASE PROTEINS,

; TITLE OF INVENTION: NUCLEIC ACID MOLECULES ENCODING HUMAN PROTEASE PROTEINS, AND

; TITLE OF INVENTION: USES THEREOF

; FILE REFERENCE: CLO01177DIV

; CURRENT APPLICATION NUMBER: US/09/920,048

; PRIOR FILING DATE: 2001-08-02

; PRIOR FILING DATE: 2001-03-22

; NUMBER OF SEQ ID NOS: 4

; SOFTWARE: FastSeq for Windows Version 4.0

; SEQ ID NO 2

; LENGTH: 855

; TYPE: PRT

; ORGANISM: Human

US-09-920-048-2

Query Match 9.38; Score 72; DB 4; Length 855;

Best Local Similarity 28.18; Pred. No. 44; Matches 47; Conservative 3; Mismatches 36; Indels 30; Gaps 4;

```

QY 58 CNTYRVFESIRLPGCPGVNPNVYVALSCQCALCRSTDCG---GPKDHLPTCD- 112
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
Db 750 COYRAAGSPSERGGP-----ORALLAGCTKASALSFAPPSRLPPDP 794
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
QY 113 -DPRFQSSSKKAPPSLPSPS-----RLPGP 138
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:
Db 795 VSKRLQSGPAPKPPPPKPLPADPQGRCPGSDLPGP 830
   |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||: |||:

```

RESULT 175

US-09-327-362-3

; Sequence 3, Application US/08327362

; Patent No. 5811249

; GENERAL INFORMATION:

; APPLICANT: William D. Odell, Jeanine T. Griffin, Sanjeev

; APPLICANT: Grover, Omar Caticha, Douglas T. Carrell,

; APPLICANT: Marion L. Woods

; TITLE OF INVENTION: Control of Infectious Microorganisms

; TITLE OF INVENTION: by Modulation of Chloronic

; TITLE OF INVENTION: Gonadotropin-Related Protein

; TITLE OF INVENTION: Activity

; TITLE OF INVENTION: Address

; CORRESPONDENCE ADDRESS:

; ADDRESSEE: Thorde, No. 5811249th & Western

; STREET: 9035 South 700 East, Suite 200

; CITY: Sandy

; STATE: Utah

; COUNTRY: USA

; ZIP: 84070

; COMPUTER READABLE FORM:

; MEDIUM TYPE: Diskette, 3.5 inch, 720 Kb storage

; COMPUTER: AST Advantage NB-SX20

; OPERATING SYSTEM: DOS 6.1

; SOFTWARE: Word Perfect 5.1

; CURRENT APPLICATION DATA:

; APPLICATION NUMBER: US/08/327,362

; FILING DATE:

; CLASSIFICATION: 435

; PRIOR APPLICATION DATA:

; APPLICATION NUMBER:

; FILING DATE:

; ATTORNEY/AGENT INFORMATION:

; NAME: Alan J. Howarth

; REGISTRATION NUMBER: 36,553

; REFERENCE/DOCKET NUMBER: T1893

; TELECOMMUNICATION INFORMATION:

TELEPHONE: (801)566-6633  
 TELEFAX: (801)566-0750  
 INFORMATION FOR SEQ ID NO: 3:  
 SEQUENCE CHARACTERISTICS:  
 LENGTH: 78 amino acids  
 TYPE: amino acid  
 TOPOLOGY: linear  
 MOLECULE TYPE: protein  
 ORGANISM: Xanthomonas maltophilia  
 STRAIN: ATCC 13637  
 US-08-327-565-3

Query Match 9.2%; Score 71.5; DB 2; Length 78;  
 Best Local Similarity 44.2%; Pred. No. 3.3;  
 Matches 19; Conservative 3; Mismatches 20; Indels 1; Gaps 1;

OY 60 YEDVRF-ESIRLPGCPVNPVSVAVALSQCCLCRSTTDC 101  
 DB 6 YKDIRGESIRSMCPVCPVPSPTAPAGLAASFNRTERC 48

## RESULT 176

US-09-158-565-3  
 Sequence 3, Application US/09158565

Patent No. 6139839

GENERAL INFORMATION:

APPLICANT: Griffin, William D.

APPLICANT: Griffin, Jeanne T.

APPLICANT: Grover, Sajeav

APPLICANT: Caticha, Omar

APPLICANT: Carrell, Douglas T.

APPLICANT: Woods, II, Marion L.

TITLE OF INVENTION: Control of Infectious Microorganisms by Modulation of

TITLE OF INVENTION: Chorionic Gonadotropin-Related Protein Activity

TITLE REFERENCE: T1893.DIV

CURRENT FILING DATE: 1998-09-09

EARLIER APPLICATION NUMBER: US 08/327,362

NUMBER OF SEQ ID NOS: 5

SOFTWARE: WordPerfect 8.0

SEQ ID NO 3

LENGTH: 78

TYPE: PRT

ORGANISM: Xanthomonas maltophilia

US-09-158-565-3

Query Match 9.2%; Score 71.5; DB 4; Length 78;  
 Best Local Similarity 44.2%; Pred. No. 3.3;  
 Matches 19; Conservative 3; Mismatches 20; Indels 1; Gaps 1;

OY 60 YEDVRF-ESIRLPGCPVNPVSVAVALSQCCLCRSTTDC 101  
 DB 6 YKDIRGESIRSMCPVCPVPSPTAPAGLAASFNRTERC 48

## RESULT 177

US-08-570-157-2

Sequence 2, Application US/08570157

Patent No. 5715035

GENERAL INFORMATION:

APPLICANT: Kopin, Alan S.

APPLICANT: Beinborn, Martin

TITLE OF INVENTION: ASSAY FOR NON-PEPTIDE AGONISTS TO

TITLE OF INVENTION: PEPTIDE HORMONE RECEPTORS

NUMBER OF SEQUENCES: 23

CORRESPONDENCE ADDRESS:

ADDRESSEE: Fish & Richardson P.C.

STREET: 225 Franklin Street

CITY: Boston

STATE: MA

COUNTRY: USA

ZIP: 02110-2804  
 COMPUTER READABLE FORM:  
 MEDIUM TYPE: Floppy disk  
 COMPUTER: IBM PC compatible  
 OPERATING SYSTEM: PC-DOS/MS-DOS  
 SOFTWARE: PatentIn Release #1.0, Version #1.30  
 CURRENT APPLICATION DATA:  
 APPLICATION NUMBER: US/08/570,157  
 FILING DATE: 11-SEP-1995  
 CLASSIFICATION: 435  
 ATTORNEY/AGENT INFORMATION:

NAME: Clark, Paul T.

REGISTRATION NUMBER: 30,162

REFERENCE/DOCKET NUMBER: 00398/109001

TELECOMMUNICATION INFORMATION:

TELEPHONE: 617/542-5070

TELEFAX: 617/542-8906

TELEX: 200134

INFORMATION FOR SEQ ID NO: 2:

SEQUENCE CHARACTERISTICS:

LENGTH: 451 amino acids

TYPE: amino acid

STRANDEDNESS: not relevant

TOPOLOGY: linear

MOLECULE TYPE: protein

US-08-570-157-2

Query Match 9.2%; Score 71.5; DB 1; Length 451;

Best Local Similarity 21.7%; Pred. No. 24;

Matches 59; Conservative 18; Mismatches 46; Indels 77; Gaps 9;

OY 10 CRPIATLAVKESCPVCTV-----NTTICAGYCPMTVRVQLQVLPALPQVVCYKRV 63

DB 284 CRPVTSVAGEDSDSC--CVOLPRLKMTL-----TPTGCPVGPGRNQAKLKKRV 336

OY 64 R-----FESIRLPGCPRG-----VNPVY--- 81

DB 337 RALLVIVLFFICWLPVSYVWTFAPGPGAGRALSGAPISFTHLLSYVACVPLVYCF 396

OY 82 ---SVAVLSQCCLCRSTTDCGP---KHPLTCDDPRQDSSSSSKAPPSLPSPRL 135

DB 397 MHRRFQACLDTCARC-----CPRPRARQPLPDEDP-----PTPSIASLSRL 440

## RESULT 178

US-08-709-924-12

Sequence 12, Application US/08709924

Patent No. 5968513

GENERAL INFORMATION:

APPLICANT: Ballo, Robert C.

APPLICANT: Ballo, Joseph

APPLICANT: Lunardi-Istardar, Yanto

TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS

TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN

NUMBER OF SEQUENCES: 26

CORRESPONDENCE ADDRESS:

ADDRESSEE: Pennie & Edmonds

STREET: 1155 Avenue of the Americas

CITY: New York

STATE: USA

COUNTRY: USA

ZIP: 10036-2711

COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC compatible

OPERATING SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PatentIn Release #1.0, Version #1.30

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/709,924

FILING DATE: 09-SEP-1996

CLASSIFICATION: 514

ATTORNEY/AGENT INFORMATION:

NAME: Misrock, S. Leslie

REGISTRATION NUMBER: 18,872  
REFERENCE/DOCKET NUMBER: 8769-018  
TELEPHONE: (212) 869-9741/8864  
TELEFAX: (212) 869-9741/8864  
INFORMATION FOR SEQ ID NO: 12:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 14 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: peptide  
US-08-709-924-12

Query Match 9.1%; Score 71; DB 2; Length 14;  
Best Local Similarity 100.0%; Pred. No. 0.53; 0; Indels 0; Gaps 0;  
Matches 14; Conservative 0; Mismatches 0

QY 45 VLGQVLPALPQVC 58  
DB 1 VLGQVLPALPQVC 14

RESULT 179  
US-08-709-925-12  
SEQUENCE CHARACTERISTICS:  
PATENT NO. 5697871  
GENERAL INFORMATION:

APPLICANT: Gallo, Robert C.  
APPLICANT: Bryant, Joseph  
APPLICANT: Lunardi-Iskandar, Yanto  
TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY  
NUMBER OF SEQUENCES: 26  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Pennie & Edmonds LLP  
STREET: 1155 Avenue of the Americas  
CITY: New York  
STATE: New York  
COUNTRY: USA  
ZIP: 10036-2711  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.30  
CURRENT APPLICATION DATA: US/08/709,925  
APPLICATION NUMBER: US/08/709,925  
FILING DATE: 09-SEP-1996  
CLASSIFICATION: 312  
ATTORNEY/AGENT INFORMATION:  
NAME: Misrock, S. Leslie  
REGISTRATION NUMBER: 18,872  
REFERENCE/DOCKET NUMBER: 8769-017  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (212) 790-9090  
TELEFAX: (212) 869-9741/8864  
INFORMATION FOR SEQ ID NO: 12:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 14 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: peptide  
US-08-709-925-12

Query Match 9.1%; Score 71; DB 2; Length 14;  
Best Local Similarity 100.0%; Pred. No. 0.53;  
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 45 VLGQVLPALPQVC 58  
DB 1 VLGQVLPALPQVC 14

RESULT 180  
US-08-708-948-12  
SEQUENCE CHARACTERISTICS:  
SEQUENCE 12, Application US/08709948  
PATENT NO. 6319504  
GENERAL INFORMATION:

APPLICANT: Gallo, Robert C.  
APPLICANT: Bryant, Joseph  
APPLICANT: Lunardi-Iskandar, Yanto  
TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION  
NUMBER OF SEQUENCES: 26  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Pennie & Edmonds LLP  
STREET: 1155 Avenue of the Americas  
CITY: New York  
STATE: New York  
COUNTRY: USA  
ZIP: 10036-2711  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
COMPUTER: IBM PC compatible  
OPERATING SYSTEM: PC-DOS/MS-DOS  
SOFTWARE: PatentIn Release #1.0, Version #1.30  
CURRENT APPLICATION DATA: US/08/709,948  
APPLICATION NUMBER: US/08/709,948  
FILING DATE: 09-SEP-1996  
CLASSIFICATION: 424  
ATTORNEY/AGENT INFORMATION:  
NAME: Misrock, S. Leslie  
REGISTRATION NUMBER: 18,872  
REFERENCE/DOCKET NUMBER: 8769-016  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (212) 790-9090  
TELEFAX: (212) 869-9741/8864  
INFORMATION FOR SEQ ID NO: 12:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 14 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: peptide  
US-08-709-948-12

Query Match 9.1%; Score 71; DB 4; Length 14;  
Best Local Similarity 100.0%; Pred. No. 0.53;  
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 45 VLGQVLPALPQVC 58  
DB 1 VLGQVLPALPQVC 14

RESULT 181  
US-08-312-870-7  
SEQUENCE 7, Application US/08312870  
PATENT NO. 5639625  
GENERAL INFORMATION:

APPLICANT: Carson, Craig W.  
APPLICANT: Emon, Charles T.  
APPLICANT: Kohn, David  
TITLE OF INVENTION: Method for Detecting Antibodies to  
NUMBER OF SEQUENCES: 11  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Richards, Medlock & Andrews  
STREET: 1201 Elm Street, Suite 4500  
CITY: Dallas  
STATE: Texas  
COUNTRY: US  
ZIP: 75270-2197  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk

```
;
;
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/312.870
; FILING DATE: 01-SEP-1995
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: Hansen, Eugene S.
; REGISTRATION NUMBER: 31,966
; REFERENCE/DOCKET NUMBER: OMRP B35150
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 214-939-4500
; TELEFAX: 214-939-4500
; INFORMATION FOR SEQ ID NO: 7:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 275 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: Protein
; US-08-312-870-7

Query Match          9.1%; Score 71; DB 1; Length 275;
Best Local Similarity 20.3%; Pred. No. 15;
Matches 37; Conservative 16; Mismatches 47; Indels 82; Gaps 11;

QY 4 EPLRP-----RCRPINATLAVEKGGPCVITVTTTICA-GYCTMTNRYLQGLPALP 54
DB 124 EPLRP-----RCRPINATLAVEKGGPCVITVTTTICA-GYCTMTNRYLQGLPALP 54
;
; QY 55 ---QVCNRYRVRESIRLPGCGPVNPNVSVYVALSCQ----- 91
; DB 162 HRCQMFQ-----TACPADCDP-----NTQASCEPCEGYILDGFCITDIDECEN 207
; QY 92 -----ALCRR-STTDGGPKDHLT-----CDPRQDSSSSKAPPSLPSP-SRLPG 137
; DB 208 GGFCSGVCHNLPTEFCIGPDSALARRHIGTDCSGKVGSGSGEPSPPTGSLTLP 267
; QY 138 PS 139
; DB 268 PA 269

RESULT 182
US-08-454-295-3
; Sequence 3, Application US/08454295
; Patent No. 6031087
; GENERAL INFORMATION:
; APPLICANT: Anderson, Marilyn A.
; APPLICANT: Atkinson, Angela H.
; APPLICANT: Beck, Robert L.
; APPLICANT: Clark, Adrienne E.
; TITLE OF INVENTION: PROTEINASE INHIBITOR, PRECURSOR THEREOF AND GENETIC
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Scully, Scott, Murphy & Presser
; STREET: 400 Garden City Plaza
; CITY: Garden City
; STATE: New York
; COUNTRY: United States of America
; ZIP: 11530
; COMPUTER READABLE FORM:
; MEDIA TYPE: floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/454,295
; FILING DATE: 01-SEP-1995
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: Digiglio, Frank S.
; REGISTRATION NUMBER: 31,346

;
; REFERENCE/DOCKET NUMBER: 9748
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (516) 742-4343
; TELEFAX: (516) 742-4366
; TELEX: 230 901 SANS UR 3;
; INFORMATION FOR SEQ ID NO:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 368 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-454-295-3

Query Match          9.1%; Score 71; DB 3; Length 368;
Best Local Similarity 22.0%; Pred. No. 21;
Matches 33; Conservative 13; Mismatches 52; Indels 52; Gaps 8;

QY 4 EPLRP-----RCRPINATLAVEKGGPCVITVTTTICAG-----YCPMTNRYLQGL 48
DB 54 EPLRP-----RCRPINATLAVEKGGPCVITVTTTICAG-----YCPMTNRYLQGL 48
;
; QY 49 VL-PALPOVVCNRYRVRESIRLPGCGPVNPNVSVYVALSCQALCRSTTD-----C 101
; DB 110 ESDPRNPK-----ACPRNCDPRIATGI-----CPLAEKKNDRICTNCC 148
; QY 102 GGPCKDHLTCDPRF-----QDSSSSKAPP 126
; DB 149 AGKCKYFSDGTFVCEGSDPKNPKACP 178

RESULT 183
US-09-431-500A-3
; Sequence 3, Application US/09431500A
; Patent No. 6261821
; GENERAL INFORMATION:
; APPLICANT: Anderson, Marilyn A.
; APPLICANT: Atkinson, Angela H.
; APPLICANT: Beck, Robert L.
; APPLICANT: Clark, Adrienne E.
; TITLE OF INVENTION: PROTEINASE INHIBITOR, PRECURSOR THEREOF AND GENETIC
; FILE REFERENCE: 9748B
; CURRENT APPLICATION NUMBER: US/09/431,500A
; CURRENT FILING DATE: 1999-11-01
; PRIOR APPLICATION NUMBER: 08/454,295
; PRIOR FILING DATE: 1995-09-01
; NUMBER OF SEQ ID NOS: 16
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 368
; MEDIA TYPE: floppy disk
; ORGANISM: Nicotiana glauca
; US-09-431-500A-3

Query Match          9.1%; Score 71; DB 4; Length 368;
Best Local Similarity 22.0%; Pred. No. 21;
Matches 33; Conservative 13; Mismatches 52; Indels 52; Gaps 8;

QY 4 EPLRP-----RCRPINATLAVEKGGPCVITVTTTICAG-----YCPMTNRYLQGL 48
DB 54 EPLRP-----RCRPINATLAVEKGGPCVITVTTTICAG-----YCPMTNRYLQGL 48
;
; QY 49 VL-PALPOVVCNRYRVRESIRLPGCGPVNPNVSVYVALSCQALCRSTTD-----C 101
; DB 110 ESDPRNPK-----ACPRNCDPRIATGI-----CPLAEKKNDRICTNCC 148
; QY 102 GGPCKDHLTCDPRF-----QDSSSSKAPP 126
; DB 149 AGKCKYFSDGTFVCEGSDPKNPKACP 178

RESULT 184
US-08-312-870-3
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RESULT 185  
US-08 735 564-2  
Sequence 2, Application US/08733564  
Patent No. 5916874  
GENERAL INFORMATION:  
APPLICANT: FUJIMURA, Kenji  
INVENTOR: FUJIMURA, Kenji  
TITLE OF INVENTION: METHOD FOR TREATING LIVER INJURY  
NUMBER OF SEQUENCES: 2  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: Birch, Stewart, Kolasch & Birch, LLP  
STREET: P.O. Box 747  
CITY: Falls Church

```

Query Match      9.1%   Score 71; DB 6; Length 572;
Local Similarity 20.3%; Pst N3 35;
Matches          37; Conservative 16; Mismatches 47; Indels 82; Gaps 11;

QY    4 EPLRP-----RCRFINATLAVREGCPVITNTTICA-GYCPTIRVLGVLPALP 54
       ||| :||| :||| :||| :||| :||| :||| :||| :||| :||| :||| :|||
Db    361 EPVDPCFRANCYQCOPLAQTSYL-----CVCAGSFAP-----IPHP 398

QY    55 ---OVCWNRDYRFESIRLPGCRGNVPVSVAVLSGCQ----- 91
       ||| :||| :||| :||| :||| :||| :||| :||| :||| :||| :|||

```

Db	399	HRQCFNCQ-----TACPADCP-----NTQSCSEPGVILDDGFTCTDDECN	444
QY	92	-----ALCR--SYTDCGKQKHLT-----CDQFQDSKSKAPPSSLPG	137
Db	445	GGFGSGVCHNLPFTFCICGPDASALRHGTDCDVGKVDGSDSEPPSTFGSLTP	504
QY	138	PS	139
Db	505	PA	506

```
OY 92 -----ALCRR--STTDGGRKHPLT-----CDPRFQDSSSSKAPPSLPSP-SRLPG 137
DB 448 GGFCSGVCHNLPGTFECICGPDSSALARRHIGTDCDSKGVGGSGSGEPSPPTPGSTLTP 507
OY 138 PS 139
DB 508 PA 509

RESULT 189
US-08-170-290A-54
; Sequence 54, Application US/08170290A
; GENERAL INFORMATION:
; APPLICANT: MORSE, WILLIAM H.
; APPLICANT: MORSE, MICHAEL J.
; APPLICANT: MORSE, MICHAEL J.
; TITLE OF INVENTION: No. 5702931el Mutagenesis Methods and
; NUMBER OF SEQUENCES: 63
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: JAMES M. HESLIN
; STREET: 379 LYTON AVE.
; CITY: PALO ALTO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94301
; COMPUTER READABLE FORM:
; MEDIUM TYPE: FLOPPY DISK
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/170.290A
; FILING DATE: 08-JUL-1991
; CLASSIFICATION: 435
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/US92/05573
; FILING DATE: 01-JUL-1992
; CLASSIFICATION: 435
; PRIOR APPLICATION NUMBER: US 07/724,237
; FILING DATE: 01-JUL-1991
; NAME/AGENT INFORMATION:
; NAME: MORSE, WILLIAM H.
; REGISTRATION NUMBER: 29,541
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 415-326-2400
; TELEFAX: 415-326-2422
; INFORMATION FOR SEQ ID NO: 54:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 575 amino acids
; TYPE: amino acid
; TOPOLOGY: Linear
; MOLECULE TYPE: protein
US-08-170-290A-54

Query Match 9.14; Score 71; DB 1; Length 575;
Best Local Similarity 20.3%; Pred. No. 35;
Matches 37; Conservative 16; Mismatches 47; Indels 82; Gaps 11:

OY 4 EPLRP-----RCRPNATLAVEKSCPCVITNTTICA-GYCPTTRVLQGVLPALP 54
DB 364 EPVDPFRANCEYCOPLNOTSYL-----CVCAGSGAP-----IPHEP 401
OY 55 ---QVCNTRDVRFSIRLPGCPGVNPNVSYVALSCQ----- 91
DB 402 HRCQFCNQ-----TACPADCP-----NTQASCEPPEGIYLDGFICTDIDECEN 447
OY 92 -----ALCRR--STTDGGRKHPLT-----CDPRFQDSSSSKAPPSLPSP-SRLPG 137
DB 448 GGFCSGVCHNLPGTFECICGPDSSALARRHIGTDCDSKGVGGSGSGEPSPPTPGSTLTP 507
OY 138 PS 139
DB 508 PA 509

RESULT 191
US-08-485-449-6
; Sequence 6, Application US/08485449
; Patent No. 5824789
; GENERAL INFORMATION:
; APPLICANT: VANDENBERG, DAVID
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS. NUCLEOTIDE
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS. NUCLEOTIDE
; NUMBER OF SEQUENCES: 7
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 755 Page Mill Road
; CITY: PALO ALTO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94304-1018
; COMPUTER READABLE FORM:
; MEDIUM TYPE: FLOPPY DISK
; COMPUTER: IBM PC compatible
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DB 448 GGFCSGVCHNLPGTFECICGPDSSALARRHIGTDCDSKGVGGSGSGEPSPPTPGSTLTP 507
OY 138 PS 139
DB 508 PA 509

RESULT 190
5466668-6
; Patent No. 5466668
; APPLICANT: GLASER, CHARLES B.; MORSE, MICHAEL J.; LIGHT,
; DAVID R.
; TITLE OF INVENTION: SUPERIOR THROMBOMODULIN ANALOGS FOR
; PHARMACEUTICAL USE
; NUMBER OF SEQUENCES: 57
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORSE, MICHAEL J.
; APPLICATION NUMBER: US/08/155,346
; FILING DATE: 22-NOV-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 568,456
; FILING DATE: 15-AUG-1990
; APPLICATION NUMBER: 506,325
; FILING DATE: 09-APR-1990
; APPLICATION NUMBER: 406,941
; FILING DATE: 13-SEP-1989
; APPLICATION NUMBER: 148,374
; FILING DATE: 28-APR-1989
; SEQ ID NO: 6
; LENGTH: 575
5466668-6

Query Match 9.14; Score 71; DB 6; Length 575;
Best Local Similarity 20.3%; Pred. No. 35;
Matches 37; Conservative 16; Mismatches 47; Indels 82; Gaps 11:

OY 4 EPLRP-----RCRPNATLAVEKSCPCVITNTTICA-GYCPTTRVLQGVLPALP 54
DB 364 EPVDPFRANCEYCOPLNOTSYL-----CVCAGSGAP-----IPHEP 401
OY 55 ---QVCNTRDVRFSIRLPGCPGVNPNVSYVALSCQ----- 91
DB 402 HRCQFCNQ-----TACPADCP-----NTQASCEPPEGIYLDGFICTDIDECEN 447
OY 92 -----ALCRR--STTDGGRKHPLT-----CDPRFQDSSSSKAPPSLPSP-SRLPG 137
DB 448 GGFCSGVCHNLPGTFECICGPDSSALARRHIGTDCDSKGVGGSGSGEPSPPTPGSTLTP 507
OY 138 PS 139
DB 508 PA 509

RESULT 191
US-08-485-449-6
; Sequence 6, Application US/08485449
; Patent No. 5824789
; GENERAL INFORMATION:
; APPLICANT: VANDENBERG, DAVID
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS. NUCLEOTIDE
; TITLE OF INVENTION: SEQUENCE ENCODING GROWTH FACTORS. NUCLEOTIDE
; NUMBER OF SEQUENCES: 7
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MORRISON & FOERSTER
; STREET: 755 Page Mill Road
; CITY: PALO ALTO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94304-1018
; COMPUTER READABLE FORM:
; MEDIUM TYPE: FLOPPY DISK
; COMPUTER: IBM PC compatible
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OPERATING SYSTEM: PC-DOS/MS-DOS  
CURRENT APPLICATION DATA: Patent Release #1.0, Version #1.30  
PATENT APPLICATION NUMBER: US/08/485,449  
FILING DATE: 09/08/1996  
CLASSIFICATION: 536  
ATTORNEY/AGENT INFORMATION:  
NAME: KOSKI, ANTOINETTE F.  
REGISTRATION NUMBER: 34,202  
REFERENCE/DOCKET NUMBER: 20296-20035.00  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (415) 813-5600  
TELEFAX: (415) 494-0792  
INFORMATION FOR SEQ ID NO: 6:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 389 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-485-449-6

Query Match 9.14; Score 70.5; DB 2: Length 389;

Best Local Similarity 26.04; Pred. No. 25;

Matches 50; Conservative 18; Mismatches 63; Indels 61; Gaps 11;

QY 8 PRCP-----INATLAVEKGP-----VCTVH--TTICAGC-- 39

DB 5 PRSPPLGLAGLLFLALFSLALSNEILGLKPGPEPTANTVCLTSLGSLKRGGLCLR 64

QY 40 -PTMT-RVLQVLPALPQVNCVNRDVFESIRLPG-----CPRGVNPV----- 80

DB 65 SPDVTASALQGLHIAVHCQHLRDQWNCSSALEGGGRPLPHHSAILKRGFESAFSML 124

QY 81 ---YSTAVALSQCACLRSTTDG---GPKDHLTCDDPQFQSSSKAPPSLPSP- 132

DB 125 MAGVHAYAT--CSLKNVSCGCKGSGEQDR-LKALLQLQALSRRGPIIPSPV 161

QY 133 ---SRLPGPSDT 141

DB 182 PGVSPSPQDT 193

RESULT 192  
US-08-665-259-21  
Sequence 21, Application US/08665259  
PATENT No. 6028173  
GENERAL INFORMATION:  
APPLICANT: Landes, Gregory M.  
APPLICANT: Burn, Timothy C.  
APPLICANT: Connors, Timothy D.  
APPLICANT: Dackowski, William R.  
APPLICANT: Van Raay, Terence J.  
APPLICANT: Klinger, Katherine W.  
TITLE OF INVENTION: NOVEL HUMAN CHROMOSOME 16 GENES,  
METHODS OF MAKING AND USING SAME  
NUMBER OF SEQUENCES: 73  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: GENZYME CORPORATION  
STREET: One Mountain Road  
CITY: Framingham  
STATE: Massachusetts  
COUNTRY: United States of America  
ZIP: 01701  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
OPERATING SYSTEM: IBM PC compatible  
SOFTWARE: Patent Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
FILING DATE: 09/08/1996  
CLASSIFICATION: 435

ATTORNEY/AGENT INFORMATION:  
NAME: Dugan, Deborah A.  
REGISTRATION NUMBER: 37,315  
REFERENCE/DOCKET NUMBER: IG5-9.1  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (508) 872-8400  
TELEFAX: (508) 872-8415  
INFORMATION FOR SEQ ID NO: 21:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 580 amino acids  
TYPE: amino acid  
TOPOLOGY: linear  
MOLECULE TYPE: protein  
US-08-665-259-21

Query Match 8.94; Score 69.5; DB 3: Length 580;

Best Local Similarity 23.54; Pred. No. 49;

Matches 43; Conservative 9; Mismatches 42; Indels 89; Gaps 11;

QY 9 RC-----RPINATLAVEKGPYCVITVTTICAGYCPTRVRLQVLPALPQVNCVRD 62

DB 287 RCKPFYCDRPNQRATARESHACLAC-----SCNGHA-----RR 319

QY 63 VRF--ESIRLPGCPGVNPVYSVALSCQ-----CALCR-----ESTTD---CG 102

DB 320 CRNNELYLGRSSG-----CYCLNCRHNTAGRHCHYCRFYRDPGLASORACR 372

QY 103 GKQHP-----LTCO--DPRFQSSSKAPPSLPSPRLPG 137

DB 373 ACDCHPVGAAGKTCNQTGGQCKDGVGTGLTCNRCAFGQFSRSPVACVKT-IPG 428

QY 138 PSD 140

DB 429 PTE 431

RESULT 193  
US-08-762-500-21  
Sequence 21, Application US/08762500  
PATENT No. 6030806  
GENERAL INFORMATION:  
APPLICANT: Landes, Gregory M.  
APPLICANT: Burn, Timothy C.  
APPLICANT: Connors, Timothy D.  
APPLICANT: Dackowski, William R.  
APPLICANT: Van Raay, Terence J.  
APPLICANT: Klinger, Katherine W.  
TITLE OF INVENTION: NOVEL HUMAN CHROMOSOME 16 GENES,  
METHODS OF MAKING AND USING SAME  
NUMBER OF SEQUENCES: 83  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: GENZYME CORPORATION  
STREET: One Mountain Road  
CITY: Framingham  
STATE: Massachusetts  
COUNTRY: United States of America  
ZIP: 01701  
COMPUTER READABLE FORM:  
MEDIUM TYPE: Floppy disk  
OPERATING SYSTEM: IBM PC compatible  
SOFTWARE: Patent Release #1.0, Version #1.30  
CURRENT APPLICATION DATA:  
FILING DATE: 09-DEC-1996  
CLASSIFICATION: 435  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: US 08/665,259  
FILING DATE: 17-JUN-1996  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: PCT/US96/10469  
FILING DATE: 17-JUN-1996  
ATTORNEY/AGENT INFORMATION:



```

; NAME: Dugan, Deborah A.
; REGISTRATION NUMBER: 37,315
; REFERENCE/DOCKET NUMBER: 7,105-9.3
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (508) 872-8400
; TELEFAX: (508) 872-5415
; INFORMATION FOR SEQ ID NO: 21:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 580 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-762-500-21

Query Match      8.9% Score 69.5; DB 3; Length 580;
Best Local Similarity 23.5%; Pred. No. 49;
Matches 43; Conservative 9; Mismatches 42; Indels 89; Gaps 11;

QY  9 RC-----RPINATLAVEKCGPCVITVNTTICAGYCTMTTRVLQGLPALPQVWCVNRD 62
Db  287 RCKPFTCDPMPQATARESHACLAC-----SCNGH-----RR 319

QY  63 VRP--ESIRLPGCPGVNPVSYAVALSQ-----CALCR-----RSTTD---CG 102
Db  320 CREWELTILGRRSG-----GYCLACRINTAGCHYCHYCEGTFDQGRALSDRRACR 372

QY  103 GKDPHP-----LTCQ--DPRFOSSSSKAPPSLPSPSLRG 137
Db  373 ACDCPVGAGKTCNQTTCQCPCKDGVGLTCNRCAPGQFSRSPVACVKTPT---IFG 428

QY  138 PSD 140
Db  429 PTE 431

RESULT 194
US-08-709-924-3
; Sequence 3, Application US/08709924
; Patent No. 5968513
; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph
; APPLICANT: Lunardi-Iskandar, Yanto
; TITLE OF INVENTION: METHODS OF PROMOTING HEMATOPOIESIS
; TITLE OF INVENTION: USING DERIVATIVES OF HUMAN CHORIONIC GONADOTROPIN
; NUMBER OF SEQUENCES: 26
; CURRENT APPLICATION DATA: US/08/709,924
; ADDRESS: 66141 Pennie
; ADDRESS: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent Release #1.0, Version #1.30
; CURRENT APPLICATION DATA: US/08/709,924
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 514
; ATTORNEY/AGENT INFORMATION:
; NAME: Mlsrock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-018
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 14 amino acids

```

```

; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; US-08-709-924-3

Query Match      8.9% Score 69; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.82;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY  42 MTRVLQGLPALPQ 55
Db  1 MTRVLQGLPALPQ 14

RESULT 195
US-08-709-925-3
; Sequence 3, Application US/08709925
; Patent No. 5997871
; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph
; APPLICANT: Lunardi-Iskandar, Yanto
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF CANCER BY
; TITLE OF INVENTION: ADMINISTRATION OF DERIVATIVES OF HUMAN CHORIONIC GONADOTROP
; NUMBER OF SEQUENCES: 26
; CURRENT APPLICATION DATA: US/08/709,925
; ADDRESS: 66141 Pennie
; ADDRESS: 1155 Avenue of the Americas
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent Release #1.0, Version #1.30
; CURRENT APPLICATION DATA: US/08/709,925
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 512
; ATTORNEY/AGENT INFORMATION:
; NAME: Mlsrock, S. Leslie
; REGISTRATION NUMBER: 18,872
; REFERENCE/DOCKET NUMBER: 8769-017
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 14 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; US-08-709-925-3

Query Match      8.9% Score 69; DB 2; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.82;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY  42 MTRVLQGLPALPQ 55
Db  1 MTRVLQGLPALPQ 14

RESULT 196
US-08-709-948-3
; Sequence 3, Application US/08709948
; Patent No. 6319504
; GENERAL INFORMATION:
; APPLICANT: Gallo, Robert C.
; APPLICANT: Bryant, Joseph

```

```

; APPLICANT: Lunardi-Iskandar, Yanto
; TITLE OF INVENTION: TREATMENT AND PREVENTION OF HIV INFECTION
; REFERENCE/DOCKET NUMBER: 01 5284
; NUMBER OF SEQUENCES: 20
; CORRESPONDENCE ADDRESS:
; ADDRESS: Pennie & Edmonds LLP
; CITY: New York
; STATE: New York
; COUNTRY: USA
; ZIP: 10036-2711
; COMPUTER READABLE FORM:
; MEDIUM TYPE: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/709,948
; FILING DATE: 09-SEP-1996
; CLASSIFICATION: 424
; ATTORNEY/AGENT INFORMATION:
; NAME: MISTOCK, S. Leslie
; REFERENCE/DOCKET NUMBER: 8,972
; TELEPHONE: (212) 790-9090
; TELEFAX: (212) 869-9741/8864
; TELEX: 66141 PENNIE
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 14 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
; US-08-709-948-3

Query Match 8.9%; Score 69; DB 4; Length 14;
Best Local Similarity 100.0%; Pred. No. 0.82;
Matches 14; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 42 MTRVQGVLPALPQ 55
Db 1 MTRVQGVLPALPQ 14

RESULT 197
US-08-749-169A-3
; Sequence 3, Application US/08/749169A
; Patent No. 5846770
; GENERAL INFORMATION:
; APPLICANT: RACIE, Lisa
; APPLICANT: LAVALLIE, Edward
; TITLE OF INVENTION: CHORDIN COMPOSITIONS
; NUMBER OF SEQUENCES: 8
; CORRESPONDENCE ADDRESS:
; ADDRESS: Genetics Institute, Inc.
; STREET: 87 CambridgePark Drive
; CITY: Cambridge
; STATE: Massachusetts
; COUNTRY: USA
; ZIP: 02140
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/749,169A
; FILING DATE: August 4, 1998
; CLASSIFICATION: 435
; ATTORNEY/AGENT INFORMATION:
; NAME: LAZAR, Steven R.

```

```

; REGISTRATION NUMBER: 32,618
; REFERENCE/DOCKET NUMBER: 01 5284
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (617) 498-8260
; TELEFAX: (617) 498-8260
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 954 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-749-169A-3

Query Match 8.9%; Score 69; DB 2; Length 954;
Best Local Similarity 22.0%; Pred. No. 96;
Matches 37; Conservative 14; Mismatches 69; Indels 48; Gaps 7;

QY 1 PSKEPLRPRCPINATLAVEKGGPCVITVNTTICAGYCPTRVQLGVLPALPQVNCVT 60
Db 720 PNYDPLCLSLCTCORRTVICDPVVCPE-----PPSCPHVQAPDOCCPCVCP-----K 765

QY 61 RDVRFESIRLEGPCRG-----VNPVYSYVALSCCQALCRSTT 99
Db 766 QDVR---DLGLPMSRDECEYFDGDSNRAGTRNHPVPPFGLNKCAVCTCKGTG 821

QY 100 D--CGGPDHDLCTDDP--RQDSSSKAPP-----PSLPSPLRCP 138
Db 822 EVICEKVCPRACQPVNVFTDCKCKCPVSGANPQLGDMQADGP 869

RESULT 198
US-09-130-032A-3
; Sequence 3, Application US/09130032A
; Patent No. 5986056
; GENERAL INFORMATION:
; APPLICANT: Lavalie, Edward
; APPLICANT: DeRobertis, Edward
; TITLE OF INVENTION: HUMAN CHORDIN COMPOSITIONS
; NUMBER OF SEQUENCES: 7
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Genetics Institute, Inc.
; STREET: 87 CambridgePark Drive
; CITY: Cambridge
; STATE: Massachusetts
; COUNTRY: USA
; ZIP: 02140
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/130,032A
; FILING DATE: August 4, 1998
; CLASSIFICATION: 530
; ATTORNEY/AGENT INFORMATION:
; NAME: LAZAR, Steven R.
; REFERENCE/DOCKET NUMBER: 32,618
; TELEPHONE: (617) 498-8260
; TELECOMMUNICATION INFORMATION:
; TELEFAX: (617) 498-8260
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 954 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-130-032A-3

Query Match 8.9%; Score 69; DB 2; Length 954;
Best Local Similarity 22.0%; Pred. No. 96;

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Matches 37; Conservative 14; Mismatches 69; Indels 48; Gaps 7;

QY	1	PSKEPLRPCRPI	NATLAVEKECP	VCITVNTTIC	AGYCPTNTRVL	QGVLPALPQVVCNY	60
		:	:	:	:	:	
Db	720	PNYDPLCSLCT	QRRRTVCDPV	CP-----	PPSCPHPVQAPD	CCCPVCPE----	K 765

QY	61	RDVRFESIRLPCCPRG-----	-----VNPVVSVAVALSCQALCRRSTT	99
		:	:	
Dd	766	QDVR---DLPLGPIRSRDPGEGCYFDGDRSRAAGTRNHPVVPPEGLTKCAVCTCKCGTC	821	

**QY**    100 D--CGGPKDHPLTCDDP-RFQDSSSSKAPP-----PSLSPSRLPGP 138  
         : - | - | - | - | - | - | - | - | - | - |  
**Dd**     822 EVIGEEKVQCPRLACAGPVRYVNPTDCCKOCPCVGSGAHPOLGNPMOANCDP 969

RESULT 199  
 US-08-937-236-3  
 ; Sequence 3, Application US/08937236  
 ; Patent No. 6187110  
 ; GENERAL INFORMATION:  
 ; APPLICANT: BARBARA J.  
 ; APPLICANT: PETRI, WILLIAM A.  
 ; APPLICANT: DODSON, JAMES M.  
 ; TITLE OF INVENTION: RECOMBINANT ENTANOPEA HISTOLYTICA LECTIN  
 ; TITLE OF INVENTION: SUBUNIT PEPTIDES AND REAGENTS SPECIFIC FOR MEMBERS OF THE  
 ; TITLE OF INVENTION: 170 KD SUBUNIT MULTIGENE FAMILY

NUMBER OF SEQUENCES: 12  
CORRESPONDENCE ADDRESS:  
ADDRESSEE: MORRISON & FOERSTER  
STREET: 2000 PENNSYLVANIA AVENUE N.W., STE. 5500  
CITY: WASHINGTON  
STATE: DC  
COUNTRY: USA

```

/ ZIP: 200006-1812
/ COMPUTER READABLE FORM:
/ MEDIUM TYPE: Floppy disk
/ COMPUTER: IBM PC compatible
/ OPERATING SYSTEM: PC-DOS/MS-DOS
/ SOFTWARE: Patentin Release #1.0, Version #1.30
/ CURRENT APPLICATION DATA:
/ APPLICATION NUMBER: US/08/937,236
/

```

FILING DATE: 424  
 PRIOR APPLICATION DATA:  
 APPLICATION NUMBER: 08/569,214  
 FILING DATE: 16 SEPTEMBER 1997  
 ATTORNEY/AGENT INFORMATION:  
 NAME: LIVNAT, SHMUEL

REGISTRATION NUMBER: 33,949  
REFERENCE/DOCKET NUMBER: 291482000622  
TELECOMMUNICATION INFORMATION:  
TELEPHONE: (202) 887-1500  
TELEFAX: (202) 887-0763  
TELEX: 90-4030  
INFORMATION FOR SEQ ID NO: 3:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 1276 amino acids  
TYPE: amino acid  
STRANDEDNESS: single  
TOPOLOGY: linear  
US-08-937-236-3

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Query Match      8.9%; Score 59; DB 4; Length 1276;
Best Local Similarity 20.3%; No. 1,36,02;
Matches 33; Conservative 23; Mismatches 63; Indels 44; Gaps 6;

Qy      8  PRCRINATLAVKEGCPV-----CITV-----NTTICAGY-----38
Db      621 PCKVSNCTDLVRDCLIKRNETSKTTYVENVDCSNKIFKADKSETKCKQYSTT 680

Qy      39  CPMTRVLGSLVLPVPCVNTVRDFESIRLPGCPRVNVPYSVAALSCCALCRST 98
Db      681 CLMGKCKVQAV-GDVSNVGGCY-----CSMGTDNITTYTHDCKNSKQCNFN 727

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QY 99 TDCGPKDHLPTCDDPRFQDSSSSSKAPPSLPSPRLPQSPDT 141
      |  :  :  :  :  :  :  :  :  :  :  :  :  :  :  :  :
Db 728 GCIKGSNSYSYCFEK--DKTSKSDNDICAECSLTCPADT 768

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RESULT 200  
US-08-569-214-3

; Sequence 3, Application US/08569214  
 ; Patent No. 6165469  
 ; GENERAL INFORMATION:  
 ; APPLICANT: MANN, BARBARA J.

APPLICANT: PETRI, WILLIAM A.  
TITLE OF INVENTION: RECOMBINANT ENTAMOEBIA HISTOLYTIC  
TITLE OF INVENTION: SUBUNIT PEPTIDES AND REAGENTS SP  
TITLE OF INVENTION: 170 KD SUBUNIT MULTIGENE FAMILY  
NO. OF SEQUENCES: 10  
NO. OF SEQUENCES: 10  
CORRESPONDENCE ADDRESS: FORSTER  
ADDRESS: 2000 PENNSYLVANIA AVENUE N.W., STE. 5500  
CITY: WASHINGTON  
STATE: DC  
COUNTRY: USA  
ZIP: 200006-1812  
COMPUTER READABLE FORM:

```

1 MEDIUM TYPE: Floppy disk
2
3 COMPUTER: IBM PC compatible
4
5 OPERATING SYSTEM: PC-DOS/MS-DOS
6
7 SOFTWARE: Patent In Release #1.0, Version #1.30
8
9 CURRENT APPLICATION DATA:
10
11 APPLICATION NUMBER: US/08/569,214
12
13 FILING DATE:
14

```

CLASSIFICATION: 424  
PRIOR APPLICATION DATA:  
APPLICATION NUMBER: PCT/US94/06890  
FILING DATE: 17-JUN-1994  
ATTORNEY/AGENT INFORMATION:  
NAME: MURASHIGE, KATE H.  
REGISTRATION NUMBER: 29,959  
REFERENCE/DOCKET NUMBER: 9148-0006.21

TELECOMMUNICATION INFORMATION:  
TELEPHONE: (202) 887-1500  
TELEFAX: (202) 887-0763  
TELEX: 90-4030

INFORMATION FOR SEQ ID NO: 3:  
SEQUENCE CHARACTERISTICS:  
LENGTH: 1291 amino acids

```

TYPE: amino acid
STRANDEDNESS: single
TOPOLOGY: linear
PS-08-369-214-3

Query Match      8.9%  Score 69;  DB 4;  Length
Best local similarity 20.2%  Pred. No. 1.4e+02;
Matches 33;  Conservative 23;  Mismatches 6;  Indels 0
      8  PRCPRIATLAVKGGCV-----CTTV-----N
      |  |  |  |  |  |  |  |  |  |  |  |  |
      636  PCKVSNCTDLVRGDLKRCNISKTYHWVDCSNKTFPAKDDSI

```

```

39  CPTNTNRVQLGVLPAALPVYCNVDRYFESIRLPGCPGVNPNVSVAYIA
b  696  CLINGKCVQAAV-GDVSNVGCY-----CSMGTONIITYHDCC
99  TDCGGKGFPHLPTCDPRFDSDSSSKAPPSLPSRSLPGPSDT 141
b  743  GKCIKIGSONSYCVFEK-DKTSKSDNDICAECSLSITPADT 783

```

Search completed: October 11, 2002, 17:58:12  
 60 time : 24 secs